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UNIVERSITY OF ILLINOIS SCHOOL OF EDUCATION

BULLETIN NO. 15

Proceedings of the High School Conference of November 18, 19, 20, 1915

PUBLISHED BY THE UNIVERSITY OF ILLINOIS
URBANA

The 1916 Conference Will Be November 23, 24, 25

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Proceedings of the High School Conference of November 18, 19, 20, 1915

Edited by Horace A. Hollister

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STATISTICS OF THE HIGH SCHOOL CONFERENCE, 1915

Total attendance	1400
Total registration exclusive of University community	1286
Number of public high schools represented in Conference	303
Number of teachers representing high schools	1164
Number of representatives of academies	21
Number of representatives of normal schools, colleges and universities	43
Number of county superintendents registered	13
Number of teachers whose expenses were paid in full by their districts	181
Number whose expenses were paid in part	180
Number of high schools represented by delegates whose expenses were paid in full or in part	137

Registration by Sections:

Administrative	211
Agricultural	32
Biology	91
Classics	106
Commercial	65
County Superintendents and Village Principals	30
Domestic Science	85
English	173
Geography	15
Manual Arts	46
Mathematics	133
Modern Language	66
Music	42
Physical Science	59
Social Science	102
No Section given and miscellaneous	30
Total	1286

PART I

GENERAL SESSIONS

One feature was made especially prominent in connection with the general sessions of the Conference for 1915. This was the high school library. Indeed, it was, in a sense, a feature of the entire Conference, since most of the sections took up the matter of listing books for the various departments of high school work. (See reports of section meetings.)

The Thursday evening program was given to the discussion of the Junior High School. This topic was presented by the High School Visitor at the request of the General Committee, and with special reference to the problem of standardization of high school work. The paper as read is given as follows:

The movement which this title suggests is, in its present most pronounced form, a comparatively recent one. As to the weakness in our school system which this movement seeks to remedy its existence has been recognized for nearly half a century. Students of education in the field of administration have long been looking for a way to effectively readjust the work of the schools in the region of articulation between high school and elementary grades. The maladjustment here has been variously designated as "a gap," "a period of marking time," "a slack place" in the progression through the various stages of common school education.

Various methods have been proposed and experimented with in the effort to eliminate the defect. The seventh and eighth grades, grades fifth to eighth, all the elementary grades, have been organized departmentally; the seventh and eighth grades segregated; manual training and domestic arts introduced in the upper grades. None of these methods seem to have been sufficiently satisfactory to meet the requirements. The extent of their adoption and use has in each case been limited. Still the demand has been for a readjustment that will meet the situation.

With the proposal to make a different division of the grades representing elementary and secondary methods of management and instruction the case seems to be different. First of all there is general agreement that the change due to the physio-psychic development of children which so strongly differentiates childhood from youth begins to manifest itself to a marked degree at about twelve to fourteen years of age, rather than fourteen to sixteen. There is also a common recognition of the fact that this early adolescent period is characterized by the greatest degree of restlessness and uncertainty of action of any period of the common school age. This has long appeared in the form

of difficulties in discipline of seventh and eighth grade pupils. In all the experiments above referred to the results seem to point definitely to the need of variation both in methods and in materials of instruction.

It is the recognition of this need that has brought us to the experiment of the intermediate school or junior high school as it is variously called. This plan proposes to reorganize the early adolescent period by bringing together in a unit the seventh, eighth and ninth grades as inclusive of an age-group that is homogeneous in character and therefore responsive to similarity of treatment in education. There are several variants to this plan. The most common of these is the segregated seventh and eighth grades with a differentiated program. A second type often met with is the plan which puts the seventh and eighth grades with the high school,—called the six-six plan. A third type, more rare than either of the two just mentioned, is the Gary type in which departmental work begins in the primary grades and the differentiation is progressive without breaking into different administrative units. This latter is a form which has been pretty well tried before. Its adoption at Gary is part of a plan to economize in rooms and in teachers. The early departmental work which it represents has not heretofore met with approval. The idea was favored by Colonel Parker, and was also used in the Dewey experimental school in Chicago twenty years ago. It is still in use in a modified way in the Francis W. Parker School of Chicago.

The wide-spread approval which this new scheme for readjusting the articulation between elementary and high school grades has received is remarkable. It now has a strong footing, in one form or another, throughout most of New England. It is practically accepted by the state of New Jersey, and has established itself, at least in a preliminary way, in Richmond, Virginia. Most of the North Central States have something started in the direction of its adoption. Most notably are Michigan, Indiana, and Ohio. Kentucky has moved decisively in the same direction. On the Pacific Coast California is practically committed to it. Within our own state two interesting experiments have been started within the year at Springfield and at Quincy, while in several instances the grammar grades have been segregated and organized on a departmental basis.

The development of the plan has, in fact, reached such a stage in Illinois and in the North Central States that a careful study of it in operation by those whose business it is to inspect high schools for accrediting has become urgently necessary. For that reason it has been my pleasure and duty, during the past two years, to observe as closely as possible, the workings of the plan and its variants in several of the most important centers of its development. To this end I have twice visited Los Angeles, California. I have investigated personally the work at Norwalk and New Britain, Connecticut; the beginning made last year at Cincinnati; the junior high school work in two of the centers in Grand Rapids, Michigan; and the work recently organized in Springfield and Quincy of our own state.

It will be our purpose here, therefore, to present to the Conference the particular object lessons which each of these typical developments has seemed to present, to analyze and criticise them briefly, and to present certain conclusions for consideration at this time.

The New Britain, Connecticut, school is a segregation of the two grammar grades organized on a departmental basis with a prevocational attachment. The assumption is that there are certain motor-minded children who need a different treatment from the rest who are given mostly academic work. Two buildings are provided, one of which is equipped admirably for the prevocational classes. This gives a distinct atmosphere to the school, and the boys and girls seemed happy and contented in their work. In the vocational departments the work is varied, changing to about four different types during the year. The same changes are repeated on a different level for the second year. Only where it is found that necessity will require the pupil to end his schooling with these two years and become a bread-winner is he permitted to specialize for a vocation. The chief end in view is to enable each one to discover where he is strongest in expressing himself through vocational activities. To this end the teachers all study carefully and compare results from time to time.

Beyond the few cases of necessity referred to teachers and pupils are made to understand that the prevocational work is not to be understood as leading inevitably to the vocational high school. In other words a state of perfect fluidity up to the high school period is the aim. With the possible change of transferring the ninth grade to this group and continuing a similar flexible plan as to the program of exercises this seems to present almost an ideal conception of the problem we are discussing and its solution. The essential features are (1) the differentiated program with departmental instruction and (2) the fluidity of the group with reference to future choices.

At Norwalk, Connecticut, there were two centers recently established, one at either end of the city. These were located in buildings constructed for elementary schools and were under the supervision of one principal who divided his time between the two. Part of the teachers had previously taught in the grades, and adjusted themselves readily to the work. Others came from the high school, and their adjustment was not so happy. One young man, a teacher of mathematics, had an eighth grade class paralyzed by a formal presentation of algebra and sought to stimulate them to action by incentives entirely foreign to a well ordered classroom.

The object lesson from this school is that teachers should be carefully selected for their adaptability to this most trying stage of common school education. In this case conditions chiefly economic compelled the use of some teachers not at all suited to the work. Such conditions, if continued, are well calculated to defeat the chief aim of such a reorganization. Not only was the selection of teachers bad, but the situation was still further complicated by the evidently inadequate supervision.

At Cincinnati I found Superintendent Condon and his aids making a very cautious approach to the matter. In one suburban school classes had been organized on the basis of academic scholarship for the purpose of making it possible for the stronger pupils, thus segregated, to gain time in their high school training. This year a second school is in operation in a new building down town. In this school a much nearer approach is made to the junior high school idea; but here also the movement is hedged about by careful restrictions.

The object lesson from this situation is the extreme caution with which the leaders of public education in Cincinnati, one of the very first cities as to its educational organization, in the United States, approach this radical experiment in readjustment.

Los Angeles has been visited twice, two years ago and again last September. This stands forth as a large city completely committed to the plan, organized throughout on such a basis with several buildings as centers constructed especially for intermediate school work. In fact the entire state of California may be said to be committed to this plan of readjustment and interesting experiments are to be found in progress in several other leading cities, notably Berkeley, Palo Alto and Santa Rosa.

At Los Angeles the scheme has been projected largely from the office of the Superintendent. As his interest has been chiefly in the field of vocational education the first plans proposed in organizing curricula for these schools emphasized strongly this phase of work. As a result pupils in many cases advanced to the regular high schools poorly prepared for the work there, and frequent failures resulted. In consequence of this a more conservative plan has been adopted this year through the cooperation of principals of the intermediate schools and high schools.

In conference with the principals of the two types of schools I found them all alike committed to the plan but differing somewhat on the readjustment of curricula. The general report is favorable. More pupils remain to attend high school, and there is a better attitude toward the discipline of the schools.

Los Angeles stands out as the largest single adoption of the plan, and the most complete commitment to the policy through material equipment. The readjustment there is of sufficiently long standing to be said to have passed the stage of experiment as to its major factors. The general unanimity of sentiment among the educational forces after so long a period is significant. Under the laws of the state the teachers are all necessarily of high grade as to scholarship, and great care has been exercised in selecting supervising principals. This situation shows that in matters of economy as well as in a better adjustment of curricula the junior high school plan has a decided advantage for large city school systems.

At Grand Rapids I spent a day and a half and was given every opportunity to observe the working of the junior high school organization. Here there were two centers, and a fine new building was ready for a third center to open in September. Each center has its own principal, carefully chosen for the work. The pupils are distributed to session rooms each of which is presided over by a teacher specially qualified to look after the selective and advisory function which such an organization involves. The organization of curricula has been well studied. The equipment is suited to the needs of the work to be undertaken. Superintendent, principals and teachers are united in the matter, and are following carefully every detail of development as the work progresses. Each school differs somewhat from the others, so as

to give a good opportunity to compare results as affected by the particular schemes of organization. The supervised study plan is used throughout.

The object lesson in this case is that of a well organized school, competently supervised, and with all the conditions making for successful work. Even here, as in California, the plan is still in the experimental stage in some of its aspects, although the general principles involved are approved, seemingly, by all concerned. Another interesting point in the Grand Rapids situation is the variation of the work with reference to its relation to the elementary school and high school. In one of the three centers the seventh, eighth and ninth grades are completely segregated. In a second center, one finds all the twelve grades of the common school, but with the three intermediate grades following the same program of studies, on a departmental basis, as is followed in the first. In the third center, opened this year, the grouping is different from either of the others as to grades in the building, but again with the same program for the junior high school grades.

Now these cases which I have given may safely be taken as typical of the best work that is being done in the United States under the title of junior high school, or intermediate school, the two titles being exactly interchangeable as they are used in actual practice. There is general agreement in all cases where the junior high school is thus organized that it should include practically the three grades we have named, although these may be segregated as under the six-three-three plan or joined with the high school as in the six-six plan. As a matter of fact the segregated plan is feasible only in the larger cities where numbers are sufficient to make the segregation economically possible. In the smaller cities and towns the six-six plan is about the only thing feasible. The idea might also find a very practical application in some of our village schools offering only one or two years of high school work. The grouping of seventh and eighth grades with these would make possible the employment of two or three strong teachers for departmental work and thus give much better net results educationally, for such a community.

The investigations thus far made lead me to the conclusion that the junior high school in some one or more of its forms offers the best solution of the particular problem which it is intended to solve that has thus far appeared. Not only does it seem to present a satisfactory form of readjustment but it also seems to open a way for effectively meeting the problem of including a workable scheme of vocational education in a unified system of public education. Yet it seems evident from the object lessons presented by the situations we have investigated that this is not an adjustment to be thoughtlessly or hurriedly adopted. The conditions and needs of any given school situation should be carefully thought out and weighed with reference to the innovations which the plan involves. Teachers, principals and superintendent should be agreed as to the wisdom of taking such a step.

The very nature of the proposed readjustment and the causes which make some form of readjustment desirable demand that extraordinary care be taken, under expert supervision, in securing a high grade of instructional and advisory work in this period. This would probably mean, among other

things, a well matured plan of supervised study and of selective and advisory agencies. Yet these matters, as well as the junior high school itself, are in the experimental stage, and their uses little understood by the rank and file of those teachers and supervising officers who, in case of their wholesale adoption, would be called upon to administer them.

In our own state there is another very significant reason why any further movement toward the establishment of the junior high school should proceed conservatively and chiefly only in those stable and economically competent city systems of which the high school is an integral part. I refer here to the township high school movement, the organization of rural districts into community high school territory, with the resultant possible establishment of complete and composite high schools. It is probably fair to say that there is today no where else in the United States so important a movement in the evolution of high schools for the masses as this movement here in our own state. And it is a movement which readily justifies itself in the one fact, even, of the ever increasing number of boys and girls from the farms who are seeking its ministrations.

Yet the six-three-three or six-six plans are not workable, under our present laws, for the 160 or more of these schools which have already been organized. The number of these schools has quadrupled in the past six or eight years, and a new organization is of almost daily occurence. It would be a fatal error to introduce a movement well calculated to hamper and retard so beneficent a movement now under way. Time should rather be given for the present impulse in this direction to spend itself. Meanwhile we may well proceed with our experiment where such experimenting is safe, and thus establish sure grounds for subsequent and more complete readjustments at this greatest point of difficulty,—the early adolescent period.

The Friday evening session was given to the discussion of the Modern High School Library, by Miss Mary E. Hall, Librarian of The Girls' High School, Brooklyn, N.Y. Miss Hall gave the following very helpful address to a large and attentive audience:

"What shall we do with the high school library?" Shall we, as some suggest, practically abolish it and send our boys and girls out to the better administered and more effective public library, thus crowding most of their reading in connection with the high school work into the few hours after school? Or, shall we develop our school library along the lines of all that is best and most vital in the public library and adapt its methods to meet the special needs of the school—making the school library what it has already become in certain cities, the center of all the high school life and work,—in very truth the *heart* of the school?

Something we must do and do quickly. The library in many of our high schools is more or less of a farce and is not "worth its keep." What little money is spent on its maintenance is wasted. Shelves are filled with dead wood,—books are bought which are mediocre,—cheap subscription books and "bargain books" with poor print and poor paper,—so unattractive that one wonders

how any high school teacher can be expected to create a taste for good reading through their use. Too many high school libraries are made up of books which make no appeal to the average high school pupil. Even where great care has been taken in selection of books. Shelves have been filled with formidable sets of classic writers and standard histories so that the school library has been too much a place of "required reading" in books which students would rarely take down from the shelves voluntarily. Mr. Jesse Davis complains that in the average high school library we find "more books telling of the manners and customs of the ancients than of the business methods of today, more relating to the history of wars and dynasties than to the great industrial movements of modern times; too much classic literature and too little present day literature dealing with the vital issues of life." One is not surprised at the verdict of a certain little Freshman, "Give me the public library every time, the school library hasn't any interesting books."

Not only have our school libraries failed in this matter of proper *selection* of books but in proper *provision for reading during the school day*. One does not have to travel far in any state or visit high schools in our large cities to any extent to realize how little school superintendents have realized the power of a large, well equipped, and attractive reading room. In many schools no reading room exists. Students are occasionally allowed to go down to consult an encyclopedia or other reference book in the principal's office. Too frequently this office is a busy and noisy place and not at all fitted for reference work. In one of our largest cities a short time ago the only reading room facilities open to some two thousand students were one or two large tables in the corridor under a rather dim electric light and the only books accessible outside of locked cases were an encyclopedia, a Latin dictionary and an English dictionary. Even where a reading room has been provided it is often pitifully small and inadequate, and too often unattractive and forbidding. Let us have a library reading room even if it means combining study hall and library to secure it. If the school has no study hall or available room fit up a corner of the assembly room with tables and book shelves. In the small rural school give one class room the Library atmosphere.

The question of *librarian* for the high school library has received little consideration and yet in this librarian lies much of the success of the library in its work for the school. At its best in times past the school library has been the care of some devoted teacher of English or history who has added this to heavy burdens in his or her own subject. At its worst the librarian has been the clerk or some friend of principal or member of the school board who wanted "short hours and easy work" or the school library has been assigned to some student needing some way to earn a little money. The general feeling in the educational world has been that "*any one* can run the school library!" If the success of the library depended simply upon someone to do "police duty" in keeping order, or to keep a record of books received and loaned this lack of any standard of training or qualifications might be excused; but the modern high school library, to be effective, must not only be carefully selected but carefully grouped or classified according to accepted methods in public and college libraries and cataloged in such a way that every

book, pamphlet, clipping, picture, lantern slide or other illustrative material is made available at a moment's notice. Each teacher in the school should be able to know exactly what the school building contains in the way of printed aids for the work of his department. The modern trained librarian knows how to put the school library on just such an efficiency basis, and by centralizing all the material in the library she can avoid unnecessary duplication and expense:—e.g., 3 sets of Julius Caesar slides of the same kind. One for Latin, one in the history department and one owned by the English department.

We have reached the time when, as one school superintendent put it, "if there are only ten teachers in the school one of them ought to have some kind of library training." Even the smallest rural high school can gain much if the teacher in charge of the books takes a brief summer course such as almost every state offers at its State university or its State Library commission at the state capital and such as many normal schools offer. There is little excuse now for any library to waste school library funds by poor selection and poor cataloging of books as has been done to so large an extent in the past. Teachers taking these courses find them helpful not only in the selection of books and care of the school library but in organizing and listing material used in their own classroom work and we may hope that before long many states will follow the example of Minnesota which requires this training of every teacher in charge of a state aided high school library.

For the city and larger township high schools standards are rapidly being set up in the way of qualifications for the librarian. School superintendents are beginning to realize that next to the high school principal no other person on the faculty must of necessity take so large a view of the high school work in all its phases as the librarian who labors to make the school library effective in all department work and in the wider intellectual and social activities which mark the modern high school. This calls for many qualifications never needed in the old time high school librarian. Our modern librarian in the high school must have a broad and thorough educational foundation for sympathetic cooperation with teachers in all departments. If college graduation is required for the teacher of English or history then this should also be the standard for the librarian. The librarian must be one whose work can command the respect and confidence of all the members of the faculty. The work of the librarian in the school is not only administrative and technical but she must have ability to instruct classes of students in the intelligent use of library tools, encyclopedias, card catalog, indexes to books and periodicals, etc. This is essential if students are to make the most effective use of the school library during their four years at high school and it will mean a wiser and better use of public library through the rest of their lives. The most important work of the librarian however, is not in cataloging books, or teaching classes how to use them for securing information, but in daily close personal guidance of individual pupils in their choice of books and leading them step by step from the mediocre to a real appreciation of the best. One can never measure what the right kind of librarian can do, working in close touch with the teacher, in introducing students to books and magazine articles which are going to send them out into life with wider interests, larger vision of the

world's work and higher ideals. For this reason we plead for the appointment of men and women who bring to the care of the high school library *maturity* and sympathy and inspiring personality. We need the person who has herself lived a rich full life and has much to pass on to the pupils who come to her for books and counsel. Many of our best high schools are making this mistake of placing the school library in charge of some recent graduate of their own school simply because she was willing to come for a few hundred dollars. This is poor economy. The librarian should bring both training and experience to the work. The Board of Regents of the State of New York has considered this matter of training of such moment that it has issued a "List of approved Library schools for the training of High School Librarians" as a guide to the Board of Examiners in New York and other cities. New York City, Spokane, Newark, N. J., and other cities have taken action recently in requiring graduation from one of these approved library schools for any appointment to a high school library position.

We have touched on the three weakest points in the average high school library today. Our watchword in the national campaign which is now being carried on through the Library department of the National Education Association is "Better books, better school library reading rooms, and better librarians"! We might add, "Definite and adequate appropriations for the maintenance of these libraries." This is a crying need when several of our large cities report *no city appropriation* at all for the school library, and state that gifts and entertainments are the only source for funds. If funds are available for expensive equipment and maintenance of science laboratories because teachers in those subjects demanded them, funds will be available for libraries if teachers and principals demand them as equally necessary for the high school work.

School superintendents and high school principals and teachers have been slow to demand these libraries because they have had no vision of their possibilities. What we term the "Twentieth century high school library" is largely the growth of the last five years. There are entire states and whole sections of the country where it is not to be found. Little has appeared in educational books and periodicals describing its work. It is only as one visits such a library and sees it "in action" that one has any conception of what it can do in strengthening the work of all departments and supplementing the work of classroom and laboratory, and shop. It is quite as important in the purely vocational high school as in the academic high school. Possibly *more* important, just because it can offer a cultural as well as inspirational element through books in a school where the curriculum is largely utilitarian. The boy who is being trained in the shop to be a skilled mechanic or printer or carpenter must also be fitted for intelligent citizenship and for the enjoyment and best possible use of his leisure time.

To the principal or school superintendent who argues that the modern vocational high school does not need a high school library we would reply in the words of Superintendent Darwin L. Bardwell: "Pupils must be made to realize that he alone succeeds in the long run who keeps mentally alive and informed of the best that his associates and competitors are doing. This calls

for receptivity and alertness of mind; a person who possesses this sort of mind must know *how and where to get information and suggestion. Probably no agency of a high school can do so much in this direction as the library.*" (Educational Review, April, 1915, p. 368-369.) Dr. Dewey in his "School and Society" as early as the year 1900 fixed the position of the "book" or reading in our modern scheme of education by placing the library at the very center of his chart illustrating the many activities of the modern school,—the work in domestic science, the shop work for boys, etc. He explains this position of the library as follows: "The center represents the manner in which all departments come together in the library; that is to say, in a *collection of the intellectual resources of all kinds that throw light upon the practical work,* that give it *meaning and liberal value.* Harmful as a substitute for experience the *library is all important in interpreting and expanding experience.*" Professor Dewey describes the *modern recitation room as half in the shop or laboratory and half in the library,* so that the students bring the experience, the problems, the questions, the particular facts they have found and discuss them so that new light may be thrown upon them, particularly new light from the experience of others, the accumulated wisdom of the world—symbolized in the library. (School and Society. 1900, p. 94-95, 100.)

To show how truly the modern school library functions in the life of the modern cosmopolitan high school one needs only to visit some of our most progressive high school libraries. The "Library hour" as it is called is being used to good advantage not only by teachers of English and history but by teachers in shop work and millinery, in printing and domestic science, physics, chemistry and physical training. In this recitation period spent with the teacher in the school library the best books on their special subjects are taken from the shelves, shown to the pupils and discussed by the teacher. The latest and most interesting articles in magazines devoted to their special subject are posted on bulletin board or called to the attention of pupils by means of lists or a talk by the teacher. Students are given special topics upon which the library can furnish material and expected to report to the class the result of their library research or reading. This means that when they go out into life they are going to know how to make the best possible use of the public library resources on their chosen vocation. They will themselves buy the best books and subscribe for the best periodicals because they have been taught their value in the school library. We are going to give them those "permanent interests" which Dr. Hanus tells us it is the business of the high school to give.

The modern high school library is a delightful spot. It is as a rule the most attractive room in the new high school building and in the larger schools covers the floor space of from three to five classrooms. Beautiful pictures on the walls, standard library furniture and equipment and interesting books in the most attractive editions the librarian can discover make it the favorite place in the entire school building in the minds of the students. Books are on open shelves, magazines are made readily accessible, there are files of pictures illustrating all the school work, collections of pamphlets which are often more valuable for the high school than books, especially the "Farmer's Bulletins" for the courses in agriculture, in domestic science and in civic biol-

ogy. Boys and girls who have become familiar with the simple method by which the librarian keeps these filed alphabetically by subject in the "Vertical file" or drawer, just like cards in a card catalogue will know how to keep their own pamphlets in shape when they come to use them in after life.

In the work in history and English, students who have helped to cut up two copies of a good daily paper and make for the library a "Daily news bulletin" of the important news items of the day have learned to get the gist of the day's news quickly, to sift the important from the trivial and to realize the difference between the contents of a first class daily paper and the news in their lower grade papers at home. The standard of newspaper reading set up in the school library is influencing the home and better newspapers are displacing the others.

The modern library has what the journalists would term a "newspaper morgue." The "vertical file" or set of drawers which even the smallest high school library may have by using some old box or having some boy make one in his manual training work is invaluable as a means of keeping newspaper clippings arranged by subjects alphabetically in large envelopes. This furnishes excellent up-to-date material for debate work, for oral reports in English, for the study of current history and especially for following closely the local affairs in one's own city and state. "City history and civic activities" are an important feature of the modern history work and the clipping file costs little and serves as an excellent supplement to books and magazines. Pamphlets issued by the city departments are also filed in these drawers and are invaluable in the study of one's own city government. Such a clipping file of local history has been developed to a remarkable extent in the Barringer high school, Newark, N. J.

High school libraries are subscribing for many of the best magazines and using them as supplementary to the text books in the work of all departments. The comparative study of some live topic of current interest through several magazines representing opposing or different views is training students to think clearly and use their own judgment after weighing the arguments of both sides. For history, English, debate work, these periodicals, in current issues and later bound for reference, are essential and needed all day long in the school building. Yet many high schools have not yet introduced these files of the best magazines.

"The browsing corner" of the new high school library is tempting students to read the best of the world's great books through the fascinating illustrated editions of Dulac, Rackham and Maxfield Parrish. Expensive books which the public library may hesitate to purchase are bought by the high school librarian or given by classes at graduation or by school clubs. They are a paying investment. Those books are in constant use. Pupils are voluntarily reading them all day. Teachers take them to class or bring classes in to introduce them to the books and art teachers give brief talks on the artists who have so splendidly interpreted through pictures the works of Shakespeare, Homer, Milton, etc., and made some of the great poetry and novels delightful reading to the students.

Vocational guidance to be successful demands a collection of many books in the school library and the Vocational guidance shelves are among the most popular and most interesting in the room. Biographies of men and women who have led successful lives, books such as Arnold Bennett's "How to live on twenty-four hours a day," Luther Gulick's "Mind and work" with its splendid notes on "The roll top desk," Marden's "The exceptional employee" and books and pamphlets on the various vocations, catalogues of schools for preparation for these vocations, books on business and social ethics and ideals of citizenship, most of these suggested in Mr. Jesse Davis's "List of books used in the Grand Rapids High School" make this corner of the library a center of interest. One drawer of the Vertical file is also devoted to "Vocations" and students bring in newspaper and magazine "clippings" of interest along all these lines.

The great value of this school library is that the material is *at hand when needed,* teacher or pupil may step out from recitation room or laboratory and secure at once needed information, may fill in a few unexpected spare moments by reading enough from a book in the school library to whet the appetite for more and may use the library material constantly in free periods all through the school day. Another great benefit of the carefully selected high school library is that it shuts out the "best seller" and the mediocre which are so apt to attract in the public library and that it surrounds the high school boy and girl for five or more hours of every school day for four years with the best possible reading matter we can expect the average high school student to appreciate and enjoy. He is not only introduced to the best literature of all times but to the best modern drama, fiction, biography, travel and books on questions of the day and so given a standard by which to measure current literature after he goes out from the influence of the school.

The new high school library is in many ways a *social center* for the school. Here literary and debating clubs meet after school. Here are held "Parent's receptions" where Principal and teachers and librarian receive parents and friends of the students. Here bulletin boards attract great numbers of students to spend the last ten or fifteen minutes of the noon hour each day and look at pictures and clippings and posters which teachers of various departments and the librarian have put up to interest pupils. In addition in the *city* high schools this library proves a splendid *study room* till late in the afternoon for pupils who live in crowded quarters at home and can find no quiet spot for study.

Those of us who have watched the influence of this library for several years are quite ready to agree with the foreign delegate to the recent International Congress of Education at Oakland when he declared that to his mind the modern high school library was *"America's most distinctive and original recent contribution to educational progress"*.

If, in the evolution of the modern high school, the condition of the school library, according to Mr. Jesse Davis, is to be the *test as to whether the school has really emerged from the mediaevalism of the past* let us as teachers, school administrators and librarians see to it that this new type of high school library is developed in every city and township and rural high school in the country.

A special feature connected with the high school library problem was the exhibit of library helps and accessories prepared by Miss Hall and Director Windsor of the University Library School together with efficient assistance in setting up the exhibit and in giving information to teachers by several of the regular University Library Staff. The following lists prepared by Miss Hall and by the Library School are published for the information of high school principals and teachers:

Supplementary List, by Miss Hall, of Some Inexpensive Helps in Making a High School Library Effective.

General work of a modern high school library.

McKnight, Elizabeth B. The high school branch. Newark Public Library, Newark, N. J. 1914. 50c.

Note: Contains excellent plan of a high school room, outlines furniture and equipment. Shows how the library serves all departments. Outlines lessons of instruction in the use of a library.

Ward, Gilbert O. The high school library. American Library Association, 78 E. Washington Street, Chicago. 10c.

A valuable guide to the best books and magazine articles on the high school library.

Aids in selecting books, periodicals, pictures, etc.

Fay, Luay and Eaton. Use of books and libraries. 1915. Boston Book Co., Boston. $2.25.

Contains excellent list of books for the small high school. Also list of periodicals, sources of illustrative material. Methods of caring for a school library, etc. Can be consulted at almost any good public library. An expensive book to buy but well worth while.

Oregon Library Commission. Books for high school libraries. Salem, Ore. 25c.

Excellent for the small high school.

U. S. Bureau of Education. List of books suited to a high school library, compiled by the University High School, Chicago, Washington, D. C. 1913. 10c.

Best suited to the city or township high school.

University of the State of New York. *School Libraries Division.*
Annotated book lists for secondary schools.
English Section
Commercial Section
History Section
State Education Building, Albany, N. Y. 1914.

These lists endeavor to keep in mind the small high school.

Wilson, Martha. Books for high school libraries. American Library Association, 78 E. Washington Street, Chicago. 50c.

Excellent for the small rural or town high school.

Wisconsin. Department of Education. Lists of books for high school libraries. 1911. 25c. Supplement. 1911-12. 15c. Madison, Wis.

Supplement has special list for agricultural high schools.

List of books for home reading.

Boy Scouts of America. Boys' books; a list of books which boys like. Boy Scouts' Headquarters. New York City.

Note: Can be had at Chicago Public Library.

National Council of Teachers of English. Report of the Committee on Home Reading. Chicago Univ. Press. 10c.

Newark Public Library. Newark, N. J. Reading for pleasure and profit. 1913. 10c.

The home reading list of the Barringer High School, Newark.

Power, Effie. List of books for older girls. St. Louis Public Library. 1914. Useful for first year in high school.

Vocational guidance.

Grand Rapids, Michigan, Public Library. List of books used by Jesse B. Davis in vocational and moral guidance in the English department, Central High School, Grand Rapids.

Hall, M. E. Vocational guidance through the library. American Library Association, 78 E. Washington Street, Chicago. 10c.

Lists inexpensive pamphlets available.

Illustrative Material.

Schulwart catalog. G. E. Stechert. New York. 65c.

Lists most of the large colored pictures exhibited at University of Illinois.

Pictures for *all* departments of high school.

Thompson Publishing Co., Syracuse, N. Y. Art reproductions: a catalog of blue prints. 1 cent each.

Useful for Ivanhoe, Shakespeare, etc.

Mackintosh & Co. Catalog of lantern slides. Chicago, Ill.

Underwood & Underwood. The world visualized.

Note: A carefully classified list of slides useful in English, History, Manual Training, Biology, Domestic Science and all departments of the high school; compiled by Frank McMurry, Columbia University.

Detroit Photographic Co., Detroit, Mich. Little phostint journeys. Collections of post cards illustrating different places of interest; e. g., Yellowstone, Irving's home, Sunnyside, etc.

Large pictures in the Illinois exhibit which teachers wanted listed as to price and publisher.

			To be obtained from
Tournament (for Ivanhoe work)	Lehmann	$ .65	G. E. Stechert, N. Y.
Weaver (for Silas Marner)	Teubuer	1.50	G. E. Stechert, N. Y.
Roman soldiers (for Julius Caesar)	Lehmann	.70	G. E. Stechert, N. Y.
Ulysses and the cattle of the sun (Odyssey)	Seeman	.75	G. E. Stechert, N. Y.
Hanfstaengl pictures for schools, each		2.50	Franz Hanfstaengl, 33 W. 31st St., N. Y.
Julius Caesar (Shakespeare, Latin and History)			Pictures published by
King Arthur's Knights (Tennyson's Idylls)			Philip and Sons,
Crusaders (for Ivanhoe)			London
Baronial Hall (for Ivanhoe)		1.25	Longmans, Green &
King John signing the Magna Charata (for Ivanhoe)		.80	Co., 443 Fifth Ave., N. Y.

List of Inexpensive Maps Published by National and State Departments.

Exhibit prepared by the University of Illinois Library School.

Total cost, $7.50, unmounted. Average cost of mounting, 4c per square foot.

North America Map, 29x38 in. . . . . . U. S. Geol. Survey $ .40

A fine map in color.

United States

Land Office map, 5x7 ft., mounted. . . . . . U. S. Supt. of Docs. 1.00

Shows the territorial expansion of the United States, by purchase and by treaty; the national parks, forest reserves, and Indian reservations. Inset maps of Alaska, Hawaii, the Philippines.

Map, 49x76 in. in 2 sections. . . . . . U. S. Geol. Survey .60

The Eastern and western sections, mounted separately, may be used in classrooms with little available wall space.

Explorations map, 23x32 in. . . . . . U. S. Supt. of Docs. .25

Shows, in color, early navigation and exploration routes and Indian trails.

Relief map, 18x28 in. . . . . . U. S. Geol. Survey .15

A fine map in color.

Contour map, 18x28 in. . . . . . U. S. Geol. Survey .15

A fine map in color.

Base map of Reclamation projects, No. 7549, 18x38 in. . . . . . U. S. Reclamation Serv. .10

Shows the reclamation projects and irrigable areas.

Map, 11x16 in. ....U. S. Geol. Survey .05

Gives the principal cities in each state. The water features are shown in color.

Map, 8½x12 in..................................U. S. Geol. Survey .01

Gives the capital and the larger cities in each state. The water features are in color. This map and the preceding map compare favorably, both in quality and in price, with other small outline maps.

Colorado

Land Office map, 29x34 in.........................U. S. Supt. of Docs. .25

Shows counties, swamp and prairie land, Indian reservations, national parks and forest preserves. Insets show plotting of the large cities. These maps are available for the states and territories west of the Mississippi River, including Alaska and Hawaii, and for several eastern states.

Illinois

Land Office map, 33x19 in.........................U. S. Supt. of Docs. .25

Shows counties, water courses, railroads, canals, swamp and prairie land.

Post route map, 33x48 in.........................U. S. Post Office Dept. .80

Shows the counties, the water courses, the railroads, but not the highways. The distance between postoffices is given in figures. These maps are available for all of the states, and for Alaska, Hawaii, and the Philippines. The larger states are on two or more sheets.

Railroad map, 35x52 in. mounted............Ill. Pub. Utilities Com. Free

Shows the counties, the water courses; the railroads are in color, and the distance between stations is given in figures. The Illinois Public Utilities Commission issues a map every two years, printing 10,000 wall maps and 10,000 pocket maps.

Base map, 30x51 in. mounted.........................Ill. Geol. Survey .44

Shows the counties, the water courses, and the railroads. The elevation above sea-level is given at frequent intervals. Map prepared in cooperation with the U. S. Geological Survey.

Geologic map, 36x53 in. mounted.....................Ill. Geol. Survey .44

Shows, in color, the rock formation throughout the state; the coal, zinc, and fluospar mines, and the petroleum and gas fields. This is a provisional map, as the final survey is not completed.

Indiana

Base map, 26x40 in. ....U. S. Geol. Survey .15

In black and white. Shows counties, principal cities, towns and villages, and the railroad lines. Available for thirty-two states.

California, central section

International map, San Francisco Bay, No. North J10, 24x25 in...U. S. Geol. Survey .40

A world map, of about 1500 sheets, has been undertaken by the leading nations. Two of the U. S. sheets are completed. The scale is 1 in. to 16 miles. A handsome map in color.

Crawford County, Illinois

Post route map, scale 1 in. to a mile...........U. S. Post Office Dept. .20

Maps are available for all counties in which rural delivery service has been completed. They show the railroads, highways, water courses, schools, churches, and farm residences.

St. Clair County, Ill. 36x36 in. mounted..............Ill. Geol. Survey .40

Shows contours, the plotting of cities, railroads, highways, farm residences. The survey was made in cooperation with the U. S. Geological Survey. St. Clair County is the only map as yet completed.

Davenport, Ia., Moline and Rock Island, Ill. 25x39 in...U. S. Miss. River Com. .26

In black and white. Shows the plotting of the cities, and each city residence or other building. This Commission charts the Mississippi River from its source to its mouth.

Chicago Lake Front, No. 1, 32x40 in............U. S. Lake Survey Office .15

Shows the lake front from Winnetka to Hyde Park. The Lake Survey charts the Great Lakes, the St. Lawrence River, Lake Champlain, and Lake George. The charts are in color, the cities are shown in insets.

Cincinnati, Ohio, and vicinity, 20x33 in..............U. S. Geol. Survey .20

Maps of many of the larger cities are available. They are made from topographic sheets, printed as a single map.

Springfield, Ill. Topographic sheet, 17x20............U. S. Geol. Survey .10

Shows the relief features, the water courses, railroads, highways, the plotting of cities, towns, and villages, the farm residences, and often the city and town residences. The section charted covers about 225 sq. miles. This work is not yet completed for all sections of the country. The U. S. Geological Survey publishes index maps which show what sheets are available for each state, also a list of the sheets which illustrate physiographic types, and a list of those which illustrate types important in engineering.

Paoli, Indiana. Post route map ....U. S. Post Office Dept. .05

Shows the routes starting from a single postoffice, the schools, churches, and farm residences. If the county rural delivery service has not been completed, such a map may be obtained for every postoffice which is a distributing center.

Geologic folio

No. 67, Danville, Ill. folio, 18x22 in.................U. S. Geol. Survey .05

Historical and economic geology sheets.

Includes maps and descriptive text of the topography, geology, underground structure, and mineral deposits. The folios which are sold for $.05 were slightly damaged by fire; the other folios sell for $.25-.75. The U. S. Geological Survey publishes index maps which show what folios are available.

Panama Canal Zone

Panama Canal, No. 954, 18x31 in............U. S. Coast & Geol. Sur. .30

A good map in color. The U. S. Coast and Geodetic Survey charts the Atlantic, the Gulf, and the Pacific Coasts; the West Indies; Alaska; Hawaii and the Philippines. The charts are usually in black and white. The Survey publishes a catalog containing index maps of the coasts.

Panama Canal, northern half, No. 5000, 30x44 in..................
....U. S. Hydrographic Off. .30

Panama Canal, southern half, No. 5001, 31x40 in...................
....U. S. Hydrographic Off. .30

Map in color, in two sections. The charts of the U. S. Hydrographic Office relate mostly to the coasts and harbors of foreign countries, and to ocean routes. The Office publishes a list of charts which illustrate physiographic types. The complete catalog of charts sells for $.50.

Orders should be sent to the following addresses.
Personal checks and postage stamps are not accepted.
Send money order, or cash at owner's risk.

U. S. Superintendent of Documents, Washington, D. C.

Maps issued by U. S. Land Office
Maps issued by U. S. Reclamation Service
Maps issued by Engineer Dept. of U. S. War Dept.

Publishes Price list of maps.

Director, U. S. Geological Survey, Washington, D. C.

Maps of North America, U. S., the States, smaller areas.
Topographic sheets
Geologic folios

Publishes—

Index maps of each state, showing topographic sheets and geologic folios issued.

List of topographic sheets illustrating physiographic types.

List of topographic sheets illustrating forms important in engineering.

Third Assistant Postmaster General, Washington, D. C.

State post route maps
County post route maps
Local center post route maps

Publishes—

List of rural delivery county maps.

Chief Clerk, U. S. Reclamation Service, Washington, D. C.

Maps showing reclamation projects.

Publishes Price list.

Lake Survey Office, Old Custom House, Detroit, Michigan.

Charts of Great Lakes, St. Lawrence River, Lake Champlain, Lake George.

Publishes Index map and Price list.

Superintendent, Coast and Geodetic Survey, Washington, D. C.

Charts of coast of U. S.

Publishes Catalogue of charts.

U. S. Hydrographic Office, Washington, D. C.

Charts of coasts and harbors of foreign countries

Publishes—

Charts illustrating physiographic types.

Catalogue of charts and books, $.50

Illinois Geological Survey, Urbana, Ill.

Maps of Illinois

County maps of Illinois (one county map issued)

Illinois Public Utilities Commission, Springfield, Ill.

Railroad map of Illinois

Meeting of Committee on High School Libraries

The members of the committees of the various sections of the High School Conference, which are compiling lists of books in their respective subjects recommended for high school libraries, met in Room 305, Library Building at 4 p. m. November 19. The following were present:

J. L. Rich,—Geography
U. S. Parker,—Social Science
J. M. Lange,—Geography
R. P. Zimmermann,—German
Winfield Scott,—Agriculture
H. H. Kirkpatrick,—Administrative
Miss Tear,—Home economics
Bertha Case,—Home economics
J. P. Gilbert,—Biology
W. H. Wilson,—Mathematics
P. L. Windsor,—University Library

Mr. Windsor was asked to serve as chairman. After discussion of the work of this group of committees, it was evident that it was worth while to have a central organization of them in order to secure a certain degree of uniformity in the scope of the book-lists recommended and in the methods of citation, annotation and arrangement of the lists; it was also proposed that provision be made for a list of general books not falling within the scope of any one of the various sections of the conference. It was agreed that the chairman should attempt to supply the various committees with recent lists of books for high school libraries and to keep the members of the committee informed respecting any matter submitted by one committee which might help others in their work. It was further agreed that the committee would prepare a report for the next high school conference including, if possible, lists of recommended books for publication, and would assist in the exhibit of recommended books at that time.

P. L. Windsor, Chairman.

The Saturday morning session was taken up by (1) Report of the Committee on Program of Studies, Dr. W. C. Bagley, chairman, and discussion of the same; (2) A discussion of the direct method of teaching Latin, by Miss Theodora E. Wye, Columbia University, N. Y. [Although an abstract of her address was promised, the editor has been able thus far to get no word from Miss Wye.]

Following is the Committee report:

Report of Committee on Program of Studies
University of Illinois, High School Conference
Adopted November 20, 1915

Just prior to the adjournment of the Conference of 1914, certain questions that had been discussed during the sessions of the Conference were referred to the Committee on Program of Studies. These questions may be grouped under four topics: I. The problem of elementary science; II. The problem of administrative reorganization as represented specifically by the junior high school plan; III. The problem of educational guidance suggested by Principal Stuart's discussion; and IV. The problem of general principles and standards in curriculum construction as represented by the papers presented at the first and second general sessions of the Conference of 1914.

The Committee on Program of Studies begs to submit the following report:

I. Regarding the problem of elementary science:

(a) The Committee believes that the organization of a course in elementary science covering two years would be of large value in the solution of the science problem in the public schools. Under present conditions, however, a course of this sort would be impracticable in many high schools of the State. Where the intermediate or junior high school plan has been introduced, the Committee suggests that the organization of such a two-year course in elementary science be carefully considered for the eighth and ninth grades. We believe that it may likewise be practicable in other systems where the eighth grade work is departmentalized. It could perhaps be offered in the ninth and tenth grades of small high schools where courses in the special sciences are impracticable.

(b) In the opinion of the Committee this course in elementary science should be organized and administered with reference to the following aims:

(1) It should acquaint the pupil with those facts and principles of natural science that have outstanding value either because of their wide application to the problems of daily life or because of the important role that they have played in the development of civilization and the consequently significant part that they play in the thought and action of this generation and of future generations.

(2) It should acquaint the pupil with these facts and principles primarily through the use of environmental materials, to the end that he may understand and appreciate the objects and forces with which he comes into direct and frequent contact.

(3) It should utilize among other methods of teaching that method which emphasizes the solution of problems and the carrying through of unified projects, to the end that the pupil may be led to appreciate the value of scientific knowledge as an instrument in the solution of human problems and to the end especially that the pupil may gain through actual practice some initial skill in scientific method, and a keen appreciation of the value of this method.

(4) It should serve as an introduction to the more intensive study of the special sciences, but

(5) It should also be organized and administered with the distinct recognition that it will be the only course in natural science as such that a large proportion of the pupils will pursue; consequently, it should represent, especially in content, the types of educative outcomes that are peculiar to the natural sciences and which, in the well rounded education of any individual, are essential to complement the outcomes which are sought in other subjects.

(c) It is the belief of the Committee that a course of this type will meet certain needs that are not met by the usual organization of the special sciences:

(1) As a general introductory course specifically designed for relatively immature pupils, it will emphasize the practical, concrete applications of the scientific method and of the important principles that have been established through the employment of this method. The more intricate and detailed study of natural science, involving abstractions that are remote from the pupil's experience and consequently difficult for him to understand and appreciate, will be left for the special courses in the later high school years.

(2) As a two-year course, it will permit a certain amount of organization in the sequence of topics, while, at the same time, it will afford ample opportunity for approaching every topic from the point of view of the pupil's needs, interests, and experiences; in other words, it will combine the advantages of the two modes of organizing educational materials that are sometimes contrasted under the terms, logical and psychological organization. In the opinion of the Committee, an over-emphasis of either form of organization at the expense of the other would be unfortunate.

(3) It will permit a much more effective organization of the courses in the separate sciences offered as electives in the later high-school years. With the preparation that this introductory course provides, and with the enrollment in the special courses limited to those pupils who have a distinct capacity for the more abstract and detailed study, the special courses could be made administratively equivalent to the introductory courses offered in

the colleges. In the belief of the Committee this would tend to terminate the present anomalous condition where we find pupils who have completed introductory science courses in the high schools compelled to repeat essentially the same ground in the college.

(d) While recognizing that opinions will differ widely as to the sequence of the larger topics in the course, and that much careful experimentation would be needed to determine the most effective sequence, the Committee suggests as a tentative proposal that the course proceed from simple inorganic phenomena to the more complex phenomena of organisms culminating in the study of man. This sequence is roughly indicated by the terms, *physical environment, plants, animals,* and *man.* The marked advantage of this procedure is that it preserves a continuity with the natural science materials that have been standardized under the general term, geography, in the elementary curriculum. Thus the start is made in a field in which the pupils have already had educative experiences.

(e) It is the belief of the Committee that an elementary science course as thus organized might well be considered a constant in practically all curriculums. In view of what science has meant to our present-day civilization; in view of the measure in which the method and the results of scientific investigation are today reflected in intelligent thought and intelligent action; the right of natural science to rank as an indispensable element in the culture of all the people cannot be ignored. It is the belief of the Committee that an elementary science course such as has been outlined will effectively recognize this right.

Where it is impracticable to organize a two-year course in elementary science such as has been outlined, the Committee recommends the consideration of the proposal that either the first or second parts of the course or a choice of either be offered in the ninth grade. If the part of the course dealing with the physical environment is offered or elected in the first year an additional elective in the biological sciences should be later encouraged, and *vice versa.*

W. C. Bagley, Chairman of Committee.

PART II

SECTION MEETINGS

Administrative Section

[This section seems to have done nothing more than to give a program. We are unable to get any record of business, not even the filling of vacancies in the membership of the executive committee. In consequence it becomes necessary to let this go over, without change, to the next session of the Conference. The morning session was devoted to a discussion of the Junior High School. The afternoon session was given over to the High School Athletic Association. The papers given at this session follow in order of presentation.]

Junior High School Administration

by

Professor Charles Hughes Johnston

Our problem as I see it is so vital, its issues so urgent, its aspects so diverse that it is difficult even to state the topic of our discussion without revealing a personal bias and also a recognizable educational philosophy. If one say "intermediate school" some see here a deplorable conservatism and a bald and uninteresting outlook. The name is, really, more vital than it may seem, and the greater and greater relative frequency with which one hears the term "junior high school" actually indicates the trend of the movement. In this discussion we may, if we can, disregard any ulterior designs in the use of the name "junior high school". We may go further and disclaim other now natural assumptions as to the essential features of the reorganization we are all discussing.

Those actively engaged in and committed to the "reorganization" plan face, of course, the problems of how many administrative units (of separate principals and teachers and students) we may best make; and the more perplexing one, of how many curriculums within the different cycles (or units) must be organized and administered for our different groups of pupils. We may, for example, finally divide, as Superintendent Young of Chicago thinks possibly desirable, the *first* six years and kindergarten into *two* curriculum units, and the *last* six years of public education also into *two;* thus having four cycles in our twelve year public school curriculum offerings. We may again, despite present strong indications, revert largely to the "two-division" (8-4) plan of precious and of recent memory. Thirdly, we may, as seems most likely at the present time, increasingly accept the three unit division or cycle arrangement—elementary, junior-high, senior-high. Even if the three-division scheme prove most acceptable with reference to matters of purely administrative ma-

chinery, we have still the major question of *where* (in terms of school age) to differentiate curriculums in the three newly divided stages of public education, and the question of *degrees of differentiation* in the two upper cycles. Here again neither the name nor the types of curriculums, nor the desirable curriculum affiliations and combinations are even near settlement. Again those possible 3 or 4 *type variations* of the 6-3-3 plan itself, which will be conditioned by size of city and character of school system, are but vaguely conceived, are being experimented with under only partially satisfactory conditions for scientific testing for their special merits, and are as yet nowhere clearly and finally determined. All this is merely to say that the term "reorganization" refers to all the newly proposed cycle divisions of the public school by years—elementary, upper-elementary, lower-secondary, upper-secondary. (See North Central Associations's characterization of the three stages in the latest annual report, 1914.)

Now it happens that most critical attention, for reasons already thrashed over and commonly accepted, is now focused upon the *middle cycle.* The boundaries of this middle ground are not settled. We shall refer in this discussion therefore for obvious reasons only incidentally to the reorganization problems of the first six years or to those of the last 3 years (4 or 5 if we include the junior college), and we shall deal chiefly with the reorganization affecting the 7, 8, and 9th years. We shall all grant that no part of the whole educational system, public or private, will remain unaffected. Nowhere at present also is the full meaning of the movement now upon us fully understood. Everywhere school men feel sure there is much of profound significance beneath the surface.

Once—in 1893, for example—our secondary education leaders may have, as they professed they did, faced a relatively clear and simple set of high school problems. The historic *Committee of Ten* was easily unanimous in their hearty and confident endorsements of their famous program for American secondary education which they so effectively launched. They were proud of their agreeable unanimity! They were mostly interested in subject matter, content of courses, providing something to teach, and at least one method of doing it. No other fundamental purposes of real life and of destiny of nations figured for them in any specific way.

The N. E. A. Committee on Articulation of School and College inherited this somewhat narrow though definite problem, but brought to it a spirit of adjustment quite admirable,—if a bit cocky and defiant. They sacrilegiously denied the sole principle of unity of the older committee of eminent educational authorities. This second report is now the most influential single piece of literature in existence in furnishing a model high school curriculum for those inclined to vary the traditional single "college preparatory" type. The chief interest however of this energetic second national committee seems, to an outsider, to have been in the questions of *educational values of particular subjects* and in *ingenious manipulations* by administrative devices of their (assumed necessary) single but new type of high school curriculum. They looked for a new flexibility and advocated a method of manipulating administrative machinery. They instituted no fundamental reexamination of all subject matter

with fearless reference chiefly to the more heterogeneous groups now in high school and of those still more varied and urgently needy groups who are not but who should be in a high school of some type. Essentially they sought to lighten the yoke of college entrance and liberalize the college entrance principle rather than to strike right out and construct different kinds of high school curriculums for the socially, economically and psychologically distinguishable groups of actual or possible high school students. The North Central Association and similar interstate standardizing agencies in other sections of the country have had for years committees on subject matter who worked always from the same point of view above—*the unit-making possibility of it all.*

Three years ago this North Central Association appointed also a standing committee on administrative problems of high school reorganization. Last year the two committees found that they could not keep off each other's preserves. So they were consolidated into one committee—the committee of fifteen "On reorganization of Secondary Education and on the Definition of a Unit". They, too, are being driven, as was the National Commission, to invent a philosophy of secondary education. Now increasingly everywhere the broadening administrative and deepening pedagogical questions are seen to be interrelated. So the National Commission hopes something will come out of the coöperative work of its twelve sub-committees of liberal specialists in subject matter (with their achieved administrative common sense), all under a "Central Reviewing Committee" whose function is to harmonize and integrate the results of the various committees into a unified program of development.*

We here are at this High School Conference similarly presenting in juxtaposition the administrative features and problems and the pedagogics of the special subject matters. If we can bring to bear upon the problem administrative common sense and harmoniously interrelated subject matters and get them formulated into a purely educational proposal we may reasonably hope to grasp what we are at liberty now to call "The Junior High School Idea". We should give it a spirit as a whole, we should combine administrative and pedagogical considerations into a platform of reform in school work, and we should so conceive this junior school idea that its underlying ideals will appear in the interests of all grades of public school work. In short neither skillful administrative manipulation nor special pedagogical reform in more or less unrelated school subjects can convey to one any meaning of "reorganization" worth discussing. Let us then for this meeting forget the corresponding but indirect effects of reorganization upon the six elementary years and upon the senior high school and junior college and let us consider the junior high school.

I shall attempt to present the movement itself, to specify distinguishable problems and place them in their proper groupings, sense the relative proportions of these different groups of new problems, suggest probable solutions where practice and educational principles seem to furnish any assuring evidence, and note the trends of developments in different types of school systems and different communities—all the while pointing out in particular (very easy!) what we do not know about the junior high school.

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*Since this article was written the Commission has appointed a special sub-committee of Administration of Secondary Education also.

I shall understand by "administrative problems" both those which are of a profoundly social nature, relating directly to the demands of democracy; the more technical ones of a financial sort; and the strictly professional ones, such as curriculum organization and the various new features of school management supposed to be essential accessories of the new organization,—type of principal and teacher, next text books, new relation to college (new units, etc.), vocational guidance and supervised study. "Administrative problems" should include also certain phases of the selection and educational organization of *content of courses.*

Administration, thus comprehensively and spiritually interpreted, is in a sense the most vital feature of any old or new organization. From one point of view it outranks even good but isolated uncoöperative teaching of special subjects. It is the *spirit of the system* which can taint or can inspire all the coöperative work of the school. Now the spirit of our reorganization must be governed by this clear *philosophy of educational administration.* Our particular question is, "Can this essential spirit of administration get its best expression in new units of internal government, new curriculum units, new types of school activities, new kinds of group conciousness and group exercise, new school relationships—all typical of the associations which its advocates connect with the junior school idea?" In other words, can we interpret the junior high school an an outward manifestation of a sound new philosophy of educational administration? That it is a manifestation of some sort of philosophy of school administration we are sure. Why do its advocates associate it with new ideas of promotion, new analyses (social, economic and psychological) of its pupil populations, new schemes of all sorts for guidance (educational, moral, temperamental), new psychological characterizations of types, new school year, new school day, new school class period? It has somehow set on fire a sort of educational imagination which cannot be checked. The particular plan one proposes may be debatable; yet its agitation brings results. Its advocacy is a means to an end. The Junior high school is no fool-proof device. Suppose it to be only a fruitful pretext; still schoolmen are using it in order purposely and in the spirit of progress to "confront themselves with a condition demanding consummate knowledge and skill in both teacher and supervisor."

Superintendent Study, of Neodesha, after 3 years of experiment and experience, thus in substance puts his experience into advice regarding the five fundamental steps to take if one moves at all in this new direction,—that of organizing a junior high school.

1. The first requisite for success is self-preparation of the superintendent himself. He must hold a reasoned position backed up with contagious enthusiasm, he must be patient, tactful and willing to wait for results, and he must know how to present his cause as well as know the technical arguments themselves.

2. The school board must be educated thoroughly before the reorganization step is taken. Being a sole promoter is fatal and wrong in principle. This sort of an educational step imposes a responsibility which the board must share.

3. Likewise the principals and the teachers must understand the aims and purposes of the new curriculums and methods of instruction, and help create the new atmosphere of success. Many superintendents have forgotten this democratic necessity, and their lieutenants have not rallied around them. As Superintendent Horn of Houston reports, it is "very difficult to get the *junior high school idea* into their minds."

4. There is another factor: the parents and the community. The possible values of the new plan must be patiently and clearly and constantly taught them through press and platform and pulpit, and informally on all sorts of social occasions.

Supt. Study means that if you believe in the new organization scheme at all you must believe in it *hard*. He has I think the only legitimate point of view and has well defined the only excusable attitude for those who venture out upon these waters. He has estimated the essential steps. These, rather than merely mechanical equipment or a sort of standardized instructional minimum or type of building or kind of textbooks or length of class period, are the real prerequisites. Before we are through with "reorganizing", of course, all these matters *(externa,* as the Germans call them) will be affected; but no school man should hesitate to adopt those characteristic features of the junior high school which will make his school system more effective, even if he cannot at first conform to somebody's arbitrary definition of such an organization.

Among these specific steps there is no one order of procedure. Some school men begin with the hardest problem first, that of curriculum reorganization and partial differentiation; others find it better to begin with some extra-curriculum feature such as vocational guidance systems, schemes for study and record of individual differences, supervised study, departmentalism, the mere addition of new subjects, the formation of slow-moving and fast-moving groups, or even social centre activities. These are details. What is useful to keep in mind is that complete reorganization cannot be accomplished at once, and that one cannot *merely wait* till a professional standardizer tells him he can launch the full-fledged junior high school machinery. All the good things which characterize systems which have acquired these combined functions through some years of practice and adjustment must be bought with the price aggressive schoolmen are accustomed to pay for such outcomes.

As this discussion is concerned primarily with those matters of administrative character as distinguished from others purely educational and even pedagogical, it may be well at this point to go into more detail regarding definite questions. Let us enumerate those typically *non-constructive administrative problems.*

Shall there be an individuality about the junior high school building? Los Angeles, Kansas City, Kansas, Trenton, N. J., Houston, Texas, Neodesha, Kansas, MacMinneville, Oregon, (all uniquely situated) furnish us hints. Houston reports "Our junior high school buildings have been admirably planned for the purpose outlined above (junior high school purposes). Especially are they adapted to the policy of emphasizing industrial education and physical edu-

cation. They have a much greater proportion of their space given to shops, kitchens, laboratories, gymnasiums, and assembly rooms than is ordinarily found in school buildings. In our South end building in particular it would have been possible to erect a building to accommodate at least 50% more students with the $250,000 which the building cost, in addition to the grounds and equipment. This would have been done, however, by adding more class-rooms at the expense of shops, laboratories, etc." I wish he had added "special libraries", as he could have done. He has *a real junior high school library.* He has also a swimming pool. Other building features are being tested in the other places named.

Where shall the directive and administrative authority be? For a long time this will be a debatable question and already some heat and strong opinion are in evidence. We are here confronted with a fresh situation in which, free from traditional prejudice, we have a fine opportunity for establishing an adjustment of administrative and supervisory relationships and coöperations which is impossible under the old system. For obvious reasons one hesitates to cite examples.

What subjects are to be offered under these new conditions? I can only reflect briefly typical opinion and special practice.

The report of the committee on the Reorganization of the Public School system of Wisconsin says in substance: English, with larger emphasis upon literature suitable for adolescents, elementary mathematics, including the simpler elements of observational geometry and algebra of the equation, general science (or elementary science)——all three interlocked with history and geography and taught with reference to later advanced sequentially related work; constructive work in all the general manual training of the public school, in domestic science, drawing and agriculture; systematic exercises in the form of music and physical education. The *additional variables* of this extended program must be selected with a view to pursuing it for two years giving it a thorough try-out and the pupil one also. Other systems make more extensive inroads into newer fields, differentiating the work in such fields as civics, commercial branches, mathematics, etc. Solvay, N. Y., is a good example to be cited later. So much for the mere addition of subjects and courses.

What measure of curriculum differentiation shall there be? Some so-called junior high schools have little if any and rest their claim to their title upon extra-instructional features. Leavitt and Brown in their new book just from the press "Prevocational Education in the Public Schools", advocate two clearly distinguishable curriculums, and base their suggestion upon the practice in a few, selected schools. In addition to this sort of differentiation, leading to *different sorts of content for different pupil groups,* we have also the kind of differentiation determined by the presence of "accelerant groups" and "slow-moving" groups in the same subject. This is cited by Briggs (U. S. Commissioner's Annual Report, 1914) as one of the most important reasons for a junior high school. Given these distinguishable groups, we have three different methods of administration with reference to them alone—obviously a new ***educational*** possibility opened up by the movement!

What shall be the modifications of subjects because of their different "curriculum settings"? One junior high school principal writes: "The work as we give it is divided into six separate curriculums. While often the same subjects may be required in the curriculums, there may be considerable difference between the subject as given in one curriculum and the same subject as given in another curriculum." English, in other words, means less technical grammar than in the old elementary course, English in the domestic, practical arts and pre-vocational curriculums means no technical grammar at all. History in the academic and commercial curriculums is like the traditional courses; in the domestic, practical arts, and vocational, it places much more emphasis upon inventions and commercial history. Arithmetic in the academic early in the course treats commercial applications of percentage as algebra, and treats their mensuration as geometry; the commercial curriculum devotes all the time to commercial applications, works more narrowly to attain a trade standard of accuracy, and speed in computation (sacrificing something of the purely mathematical exercise). So it is with the drawing work and the science work. He goes on to explain how the academic group takes German five times a week, while the commercial is taking typewriting two years and bookkeeping one, and the household science pupils are having two double periods each in cooking and in sewing, practical arts pupils four double periods in shops and one double period in shop drawing, and the vocational pupils, their longer school day and school year in practical work. All "academic" boys and girls get some of the shop work or the cooking and sewing.

What entrance requirement to the junior high school?—All overage from the now better organized six-year elementary school.

What shall be the entrance requirements to the senior high high school? Superintendent Spaulding of Minneapolis says age and maturity, not scholastic attainment; not ability to do the work offered in the "single-curriculum" senior high school, but ability to do something different from the babies of the first six grades and something which the modern upper high school must, if it does not now, offer. Superintendent Maxwell would have no "scholastic entrance requirement" for the group who are destined for the vocational work of the junior high school but he would add a more rigid scholastic test for the others —a compromise. Of the three practices, I like Spaulding's.

How record credits? To be dogmatic: by the semester hour plan, as in college, because of the desirable varying of number of class-periods for courses in order to assist in meeting the situation arising from "accelerant classes", new features, etc.

How shall the same subject (German or Latin) be different in form and in unit of credit value when given in junior and in senior high school? (See Report of North Central Association, Committee on Definition of a Unit—1914). This solution is tentative but in the right direction.

What unique systems of advice and guidance are particularly suitable for junior high schools? (See Somerville, Mass. Superintendent C. S. Clark's Annual Report, 1914).

What is the most practical system of card-index of individual traits, etc. and what can we do with all this personal information of pupils once we get it? (Experiments are various, but there is as yet no answer to this question.)

What are the qualifications of the "home teacher", "adviser teacher", "mother-teacher", in regard to preventing impossible assignments (a danger of all junior high schools at first), in dealing with absences, discipline, etc? A new functionary is here being developed. (See McMinneville, Oregon; Houston, Texas; Decatur and Urbana, Ill. et. al.)

What is junior high school laboratory work? Individual experimentation, or wholly demonstrational? and in what subjects practicable? See N. E. A. formulation of "Project". Report of Committee on General Science, February, 1915).

What is a junior high school library? (See Springfield, Houston, Decatur, for reports showing widely differing facilities).

What is the proper class period, Number of periods per day, per week, proper division for study and for recitation, variation with subjects? (Variation here is indicative of most thorough experimentation with many different combinations of features.)

Can we standardize the home study for this cycle as the French do and can we administer our own standards? (No data of value as proof, but much of "suggestive" value.)

What is practicable and what desirable regarding departmentalism? (See Superintendent's Reports from Rochester, Solvay, and H. W. Josselyn's Survey of Accredited Schools of Kansas for variations of so-called "departmentalism" itself.)

What shall be the number of studies taken at one time by the pupil in junior high school, and how many times per week? (See North Central Association Report, 1914, which appears here to be in direct opposition to the central idea of exploitation of interests, aptitudes, etc. of pupils partly by means of a greater variety and larger number of courses. (See also the "concentration" method of administration of curriculums in Manual Training High School, Indianapolis.)

How standardize the instruction hours per teacher per week? (Extreme variation in practice.)

Shall junior high school teachers be college graduates? (This is evidently a common ideal.)

What is a reasonable salary scale as compared with senior high school teachers? (Some advocate same scale.)

May we expect an interchange of service and of supervision as well as of use of apparatus and of library facilities? (Different systems will soon be able to contribute pertinent experience here.)

What is the minimum number of pupils essential to the ideal junior high school organization? Merely enough for full classes, for sections in laboratories and for special libraries; enough to justify especial auditorium exercises for credit; enough for accelerant groups; enough to reduce the percapita costs

to what figure? (See Holland's Reports of Louisville Public Schools, 1913, 14, and H. W. Josselyn, in Johnston's *The Modern High School,* Chap. V.)

As to arguments I shall not rehash them now. They are familiar to all who read modern educational literature or even to those who merely attend educational meetings. Each side urges the cause of democracy itself as the first argument, and from this goes forth into "castes in society", and "tampering with curriculums" down to mere matters of administrative device. (See enumeration of these arguments by the writer in Educational Administration and Supervision, March 1915).

The extent of the movement is now impressive. There are at least six states which have "resolved" and taken other steps. Many teachers associations, including the National Educational Association and some large universities, including University of Michigan, and the University of Chicago, have adjusted temporarily their entrance requirements, and the North Central Association has twice announced its intention to propose some more fundamental method of articulation. The National Commission of Secondary Education and the Department of Superintendence are committed. At the present time a large number of schools in the North Central territory alone report themselves as "unorthodox"—most of them being clearly intentional junior high schools. A larger number report their intention to reorganize in the near future. Douglass in 1913 was in communication with 135 such schools. Briggs, in the Annual Commissioner's Report 1914, cites 167 cities as having one or more junior schools and elsewhere speaks of being in communication with 193, and says that 222 others had declared their plans formed for such a step. The North Central territory contains the same impressive proportion of these intending to reform. Doubtless many of these are not full-fledged junior high schools. The more interesting thing is that they *are* such in what to them is *some essential feature* and it is their intention of gradually incorporating others. I believe their spirit is a good one,—launch right out when the preparations above specified are made, and do the thing which seems best to start upon. Local conditions will determine which ones of all those enumerated steps should come first.

As to proofs we have at present only "case records" of successes of individual systems—no appraisal of large numbers of systems with reference to items of improvement in common, measured under comparable conditions. Furthermore, we have no reported failures or "reversions" to the older type.

Thus far we have mentioned the strictly administrative problems, largely external to the curriculum differentiations themselves. *Curriculum differentiation and specialized training* in the senior high school scarcely longer admits of argument. It is the great issue in the junior high school. There is a sense in which curriculum differentiation at this school stage is questionable. Certainly few would advocate pigeonholing all the pupils of these grades by absolute segregation with specialized methods and courses and distinctive subjects. There is another sort of curriculum differentiation, however, which is basic to the very junior high school idea itself. It may be progressively illus-

trated by Richmond, Indiana; Trenton, N. J. and Solvay, N. Y., and by certain extreme vocational curriculums in Massachusetts and New York.

We may say that the "prevocational issue" appears to be the most prominent reason or pretext for junior high school curriculum differentiation. Briggs calls attention to the fact that there were only 57 of the 167 junior high schools which he examined which differentiate their curriculums on some other than a vocational basis. This "prevocational" appears to be an ill-chosen name however to cover, as it does, all the curriculum variations from the traditional academic curriculum. We may distinguish the following typical attitudes of curriculum makers for junior high schools:—

1. The *traditional academicist* will have none of it.

2. The average fair schoolman who will make—often from necessity—the gingerly solution of adding 2 subjects—manual training and domestic science.

3. The "Cole type" (See Cole, Industrial Education in the Elementary School.) who will renovate the academic subjects a bit and add a new subject which is called *"Industry"*, and which will function for giving "industrial insight" and "appreciation of labor".

4. The Indiana spiral plan of a sort of academic organization in much detail of the state required vocational subjects in the upper grades to be followed by elaboration of same material in high school.

5. The state aided vocational work for selected junior high school boys and girls in New York, New Jersey, Pennsylvania, Massachusetts.

6. There is what we may call the most recent Leavitt and Brown's "new general prevocational education" for the "prevocational type" of boy and girl. It does not contemplate any new names for school subjects, but does propose *entirely new content* for this special, psychologically different group. (See Prevocational Education in the Public Schools.)

7. There is the Solvay "five-curriculum" scheme, with the third "readjustment" year for those who change their curriculum after the two years' try-out.

8. The "Ettinger cross-section curriculum scheme" of New York City is both interesting as an offered substitute for the Gary system and for being now tried out in some New York schools.

9. Then lastly we have the Gary plan, and now numerous variations of it—a scheme of such fundamentally and profoundly reorganized materials and methods that even curriculum differentiation is not necessary—since there is left no academic curriculum from which to differentiate.

The junior high school has before it all these models of differentiation.

For whom definitely are all these differentiations of curriculums devised? Leavitt is an illustration of an advocate of curriculum differentiation on the ground of psychologically different types of junior high school pupils—the "scholastic type" and the prevocational type". His differentiated curriculum is not for the "thousands and thousands who succeed in school work now"—but for the retarded. Even some of these are not "serious", unless they have acquired a "chronic dislike for school". One suspects that Leavitt is after all, however, thinking of a large number of pupils, not only of those overage in the

overburdened first six grades, but also of numbers of those who have not been gripped by academic interests. One suspects too that Mr. Leavitt is visioning some final and fundamental reorganization of all public school work of these grades. Solvay makes its five division differentiation with "social needs as the curriculum clue". (see p. 65 of Superintendent's 1914 Report.) The Ayres method of analysis of pupils' "career probabilities" as used for the "readjustment year" is provided to correct errors in curriculum placement. The "Ettinger Plan" is preceded by parent-teacher conference and correspondence. These are but a few of the plans for curriculum differentiations now being achieved in the junior high school period. All bear close relation to the next problem, that of the *content of the courses constituting the curriculum.*

The "junior high school idea" implies the earnest and thoroughgoing examination of all subject matter with a view to its definite aims and values. The further work of the National Society for the Study of Education in following its work (Fourteenth Year-Book) in some of the traditional elementary subjects by an examination into the next subjects and courses as they vary with their *"curriculum settings"* in junior high schools, will be awaited with interest.

The increasing number of Junior High School Manuals now being published contain quite elaborately and carefully worked out "units of instruction" within the newly established junior high school courses. This is of course indicative of the most profound and far-reaching phase of the whole movement. Indeed, the movement itself might be said to exist and to gather its momentum in order thus to eventuate in a thoroughly reorganized educational aim, content and method. This paper has sought chiefly to suggest the administrative instrumentality which will likely further this widespread spirit of public school reform.

Administration and Supervision

By L. F. Jones, Oak Park

The program may lead some of you who have not attempted the solution of our problem to the conclusion that I have solved the questions relating to the administration and supervision of a Junior-Senior High School organization, or have suggestions which will lead to their solution. The theme chosen is one which may be stated as, "A few critical phases of the administration and supervision of the Junior-Senior organization as they appear to a student of the problem." Out of a hundred or more details which will perplex the man who attempts this solution, Dr. Johnston has suggested thirty-seven of the more fundamental. As my position is that of a "discusser", I will raise only those questions which can be touched on in a limited portion of time.

From investigations made by the N. E. A. and other interested parties, we find that a reorganization of our whole public school system is desired by the majority of our thinking school men. The present age is against any system of business, government or school which is founded on any other than a rational foundation. And this is as it should be. Some of our extreme conservatives are imbued with the idea that the present school organization and program of studies in the United States is what it should be in a democracy

and that all that is needed to make it a great success is better teaching; others, less conservative feel that departmental teaching in grades seven and eight of our elementary system will bring the desired results, while others are of the persuasion that the logical beginning of secondary education should be in the seventh grade (or twelfth year of child's life) and should consist of six years, divided into two units of three years each, with a flexible program, especially in the seventh, eighth and ninth grades where pupils might be helped to find themselves by partaking of academic or prevocational work followed by three years of strictly preparatory courses for college or immediate use in the business world on its completion.

I think we will agree that neither reorganization nor good teaching, of themselves alone, will cause our schools to measure up to what the people have a right to expect. But, assuming good teaching, will not a saner organization predicate far greater results than we are now getting? Since it seems clear that the reorganization should take place along the lines of a 6-3-3 plan, we must first face the question of a standardization of the first six grades, and here, to me, comes the first critical point. Can we measure with a pedagogical yard stick, at present, on a quantity basis, the fundamentals to be completed in the first six years? Is there not a qualitative basis which has its outcomes in habits, appreciations and ideals? The answer comes back to me that Ayers, Thorndike, Rice, Courtis, Stone, Corninan, Hilligas and scores of lesser lights are rapidly completing various tests which may help with the first and that studies such as drawing, music, nature study, constructive and illustrative handwork and physical education will tend to care for the latter.

What should the essential tool subjects be? Superintendent Van Sickle has pointed out, there is the danger in determining the essentials of a course of study and adopting measures of accomplishment that too narrow a definition of essentials will be adopted. Fixed knowledge of fundamental processes is no more and no less essential than mental attitude, habits of thought and emotion, working ideals and power. The Cleveland report to the N. E. A. contains good suggestions as to what should be accomplished in these six years. A still more definite report is one prepared by Supt. Moore, commended by Prof. Coffman.

What are high school teachers doing in this line? What should junior high school students do in secondary work and how much?

If the present majority of pupils who drop out before completing the seventh and eighth grades on account of over age and failure to fit into a uniform curriculum are really to be given an equal opportunity in our schools, access to our junior high school should not be denied them. Here it seems should be offered a flexible program of three years, academic, industrial and commercial work where they may have a chance to find themselves. And right here, is where Prof. Douglass of Clark University, in his investigation, found that the junior high schools now organized were making no provision other than had existed under the old organization for promotion from grades six and seven. And right here is a real problem. The schools already organized are not making a sufficiently radical reorganization. If the first years of the junior high school are to continue the unprogressive, uneconomical traditions of the sev-

enth and eighth grades, why the change? It seems to me that the following from the Portland Survey bears heavily on this point. "The most fundamental principle in this connection, is that instruction, both in content and in method, must be adapted to pupils needs, to individual need; not the instruction that a pupil has had, but the instruction that he needs; not what a pupil has learned, but what he needs most to learn, must determine the placing of the pupil. Carried into actual practice, this means that when a pupil has reached in maturity and needs the intermediate period, he is to be advanced to instruction appropriate to that period, whether he has completed the normal work of the elementary period or not; instruction must always fit the stage of development. even to the individual needs in that stage of development; elementary instruction is not suitable for children of the intermediate stage, nor is intermediate instruction suitable for youth of the secondary stage".

With the pupil in the lower high school, with mates of his own age, courses to fit him and promotion by subject rather than grade, it seems fair to assume that the greater number would be retained through the ninth grade, at least. Dr. Johnston's Questionary will give us reliable data when compiled.

The question of teachers, who, for instance, could handle a foreign language, a so-called high school subject, will be one of the most difficult administrative problems, a question of methods and books will be another. This I take it, is only a challenge to us to meet the problem. Modern school administration has no place for a weakling. Departmental work, by grade teachers, has been used to solve this problem, generally in California, but it seems to me that a better method is that employed in Detroit where the classes are handled by the better high school teachers, with success. This would give, partly, the necessary correlation with the lower high school and also require the teacher to find out that he is teaching children, not the subjects alone. It appears to me that the principal of this school should give his entire time to the administration and supervision of his school and be assistant principal to the man in charge of the senior high school, as unity there must be.

The junior high school is to recognize diversity of direction, differentiation of purpose, and attention to individual needs in a manner largely neglected heretofore. In order that its principal and student advisor, may do their best for the individual pupil in helping him to find himself, some system must be devised whereby they may know more intimately the children coming up from the grades, and be able to pass on such a knowledge to the senior school or to employers of those who leave before completion of entire secondary work. A card system seems imperative. Upon this might be placed information as to age, parentage, deportment, aptitude, ability shown and probably other important items, but not too lengthy.

Presuming the pupil has not completed the junior school, what basis shall we follow in promoting him into the senior school, where I take it the lines will be drawn more strictly as to curriculums where he will prepare for college, or for more immediate employment in the industrial or commercial world? Probably there will be little hesitancy in admitting to the general or vocational curriculums those from the prevocational below; but what of the academic?

Has his work been so segregated in the lower school that he will fit into no other curriculum? Are we to have a system open at the bottom and closed at the top? Shall we be guided by Ayer's view as to human compensation, which gives to some marked ability in abstract work and a deficiency in concrete work or vice versa, that in the long run those who are endowed one way are also in another?

Or shall we so arrange the work in grades seven, eight and nine that accelerant groups may be formed for its completion in two years while the others who decide to enter high school may have another opportunity in the ninth grade to prepare for the college road? A slow pupil does not mean a dumb one or one to whom the road to greater educational heights should be barred. I am led to believe that we are in some danger at the present time, of splitting our education too far down. In other words, that we are in danger of forcing too narrow a specialization on immature minds.

Science

By John G. Coulter, Bloomington

The Committee of Ten sought to establish science as laboratory courses rather than as book courses. That was the great reform of twenty years ago in connection with natural science; it was the period of emergence from the book.

The questions which concern us this morning are questions which then had not arisen. They were content then to prescribe one year of natural science, with the thought that it should be any one of a number of sciences. The need for *general training in the whole field of science* appears not to have been felt then as it is felt now. Attention was focused upon the method of teaching rather than the content.

But now for some years the conviction has been growing that *one year of science is not enough.* Two years are quite generally required. What shall be the nature of these two years of required work? Practice shows wide diversity. There is little satisfaction with the plans generally in vogue. There is need of a certain amount of standardization both of method and of content; need for synthesis of the content in the interest of unity of the whole. The tendency to make eighth grade work departmental gives an opportunity to reorganize the science work that we have not had before; opportunity to extend the attention given to general elementary science. It is the improvement of that opportunity which concerns us now.

Then let us consider science as it may be organized in the eighth and ninth grades. Is there any foundation upon which we can successfully build; any previous work which may be advantageously taken into account in planning the work in elementary science? Unquestionably, it seems to me, we find such foundation in the geography of the elementary school.

In late years there has been a wide and increasing tendency to terminate the geography work with the seventh grade. The results of this arrangement have been so satisfactory that this plan has become quite general. In the seventh grade, major attention is given to general geography. Commonly the fall

term is given to this study of geographic or natural science principles, and then the following terms devoted to an applied study of these principles in terms of certain specific geographical areas, i. e., certain continents.

The basic topics in this general geography are as follows:

Form and size of earth, proofs of its rotundity, its motions and their results. Gravitation. Explanation of the seasons and of the zones. Winds and rain. Circulation of the atmosphere. Distribution of heat and light. Interrelations of air, heat and moisture. Interrelations of land masses and rainfall; weather. Weather maps. Ocean currents and tides. Relations between physical environment and the distribution of plants, animals and man. (Tarr and McMurry.)

This sounds a good deal like the content of elementary science. But let us note that in the *treatment* of these topics there is a truly fine discrimination; clear evidence there is of grasp of the psychological situation; a nicely judged *balance* and *restraint* of treatment is evident in all this part of the course. Thus for example note a footnote to the treatment of the seasons:

Some may wish to introduce here an explanation of the effects of the earth's axis and a more complete study of the seasons. This has not been included here because it is felt that this is a subject better fitted for the high school age.

We may well be grateful to geography and the geographers. Their subject is itself in part a phase of natural science, to be sure, and yet as a school subject geography is much older and naturally much better organized for pedagogical purposes than is natural science.

Inevitably then it is geography that lends us our starting point. It is that large part of geography that is non-political that furnishes us in grades four to seven what we may call *the first instructional cycle in the materials of natural science*. Now in grade eight or nine we are to begin the second. Here we are to plan that course—I do not hesitate to say a two-year course—that is to provide for the large majority of our pupils all they will ever have of definite training in Nature, and in the intimate relations and applications of her principles and processes to life; all that the large majority will ever have of study of life and environment in terms of science. One is tempted to plunge into defense of the proposal of two years as the minimum, yet such defense would be foolish; this is a matter which will so inevitably take care of itself. As pedagogical practice improves, subjects are sure to stand or fall by virtue of their content rather than by virtue of their traditions. In this connection science suffers no poverty. It suffers rather from an embarrassment of riches which has proven a heavy handicap to the perfection of its pedagogy.

What then shall this course be? Long since the boundaries of special science have been burst in this connection. The demand for a *general* course is imperative. No one or two single branches of science will serve. Other content will not be denied. No course will stand that excludes any of the truly great facts of nature.

Just as purely organized science has proved itself too limited in content, similarly general science under the one-year plan is proving itself too deficient in organization. By this I mean of course general science that attempts to be

general in content and scientific in organization, and to be both in one year of 150 hours! This can't be done. With the fundamental aims of general science one may be quite in accord. I am. Yet one may surely protest against attempt to fulfil those aims under impossible conditions. General History *as a one year course* was hopefully and thoroughly tried and found unsatisfactory. A similar discovery is being made as to general science.

Let us try to be positive as well as negative; to say what our course shall be as well as what it should not be. Let us bring our case into court. It is *not* a case of botany vs. physics, or of biology vs. physiography, or of the claims of any special science whatsoever. The names of the special sciences are names better left out of this discussion than included. Their inclusion fogs the real issue. Our real issue, our real case is, of course, the pupil and the pupil's needs, his needs as to this great realm of natural science, and no special science has claim here for its own sake. Its claims rest wholly on the extent to which it contributes to a unified result determined by a conception of the pupil's needs. Glimpses of this, of that, and of the other science will never do. We must have a *natural* unit of natural science made in the image of the pupil in his or her world; not in the image of the scientist in his laboratory. This is what general science is *trying* to do, of course, and failing to do when through too brief time it denies the pupil his chance to build up, gradually and enduringly, logical organization of his knowledge; an organization that he needs just as much as the scientist in his laboratory.

So now we have our case in court. The pupil. He has been there before. But a trouble has been that he has not been kept in his proper place. Too much for his own good we have sought for wisdom in him rather than in ourselves. He has been more than the case. He has been judge and jury too. We have catered too much to his alleged interests. Yet what in the world is more fluctuating and vagrant than the *unguided interests* of youth!

To find out what interests the pupil is no more important than to find out what, in the pupil's interest, should be omitted or postponed. There is widespread belief that the pupil's interest depends on method more than it does on matter, but there is little belief if any that method can make a real science course out of a jumble of subject matter. Science means "a way of solving problems," but it equally means more than that. In that sense alone, good nature study is science, and nature-study is for the lower grades. But soon the organization of subject matter has important claims, a claim equal if not prior to that of method. The high school beginner is more ready to appreciate and apply science as organization than science as method. So the teacher needs a vision to see why this attractive topic or that needs at this time or that, in its own interest, a certain restraint of treatment. The course as a whole, like a picture, should have its parts in true perspective. We perceive in this connection the great need that exists for determination of the relative values of subject matter in the field of elementary science. Its mass looms greater, and its order for elementary pedagogical purposes is less, than any other of our great divisions of subject matter.

But to go back to the pupil as he stands on the threshold of what we call his secondary education. He is fresh from that great glimpse that geography has given of the physical world in which he lives. He is ready to go on from that point. He *needs* to go on from that point. In science *as science* he is, of course, not interested—not usually; that is, if you ask him. But in life and what fashions it he is more interested than in anything else. He is still wondering what sort of world he is in, and has a hunger that he may not show for what will interpret and explain the experiences that crowd upon him; for what will light up the future that he vaguely feels with secret apprehension. His place in the world—that's what he wants to know. He wants a scheme of things, one founded in the familiar things about him, one that interprets and makes things clear, one whose truth is attested in every experience, rather than one that is in a book and apart from daily life. This hunger of his we know he has because we felt it keenly ourselves; felt it even more keenly at his age than we feel it now, though to have given tongue to it was quite beyond us. The boy that still lives in us is better evidence of what boys want than a hundred experiments. Why experiment with him as we might with a creature of another order when he and we were one only the other day? There is much of false conception in this outcry against "authority" in education. The "authority" of a wise teacher may be more scientific than a hundred experiments, each with their hundred sources of error.

So it is life and its controls, its laws and its inescapable conditions, its fundamental needs and its glorious possibilities that we will interpret for him in his two-year general course in natural science. Gradually, painstakingly, we will paint for him the picture. First the background. The great primitive and permanent controls. Heat and light, matter and motion, gravitation, air, water, and soil, the dynamics of topography, inorganic and then organic in their relationships; these we will interpret through many a familiar instance, through study of media and of experiences that are matters of every day and all the time.

This setting of the stage for life—through the fall term. Then, in true genetic order, plants and their relations to soil and water and light and air and their great role in life of men. This in the spring term, the most fortunate seasonal adjustment; an environmental study. Fall, again, in the second year, for animals when insects abound—in September, best month of all for the approach to animal studies. Now we are getting in the foreground of our picture—life.

We come finally to its central figure—man. Man in the last term of this four-term course. His modern adjustments made in keeping with fulfilment of the ancient and continuing primal needs of his body. The body, product of a long and different past now appreciated, its limitations recognized, to be controlled and managed that it may work effectively like some fine instrument, despite the artificial conditions that civilization imposes upon it. Physical environment, plants, animals, man—do you get a glimpse of the picture that such a basis of the course suggests? Look in the last High School Manual and you will get a suggestion of the same picture in its indication of "physiography, botany, zoology, and physiology" as the desirable two-year sequence of the

science courses. The difficulty with those terms is that they do not sufficiently suggest the synthesis of the whole, but rather the old "water-tight compartments" to which we all object. It is synthesis that we need—effective pedagogical synthesis, and determination of relative values in terms of pupils' needs, future as well as immediate, perhaps future *rather* than immediate. It is effective foundation that we want first rather than unstable though attractive superstructure.

Whether the sort of picture of elementary science I have suggested appeals to you or not, some sort of picture you will have to get. Your teachers are mostly specialists. You can get the balanced picture better than they. Until you do have some such picture in mind, you will always find yourself at loss in determining what you yourself want the general content of your science courses to be. Is it not true that you feel more sure of your judgment as to any other subject than you do as to science? You will have to know what you want in science just as you know what you want in history or English before your science work will ever be satisfactory. Until you do get such a picture, science will seem to you only a mass of facts to be picked from, and all this claim for the greater value of principles will be only a murmur in your ears.

Whatever the organization of the schools, once the administrators of them get a clear view of the educative values of natural science, at least a two-year course is sure to be required of all. Meanwhile, this development of the intermediate school tendency, even though it go no further than departmental teaching in the eight grade, facilitates the installation of a two-year course. We may look for something like the following:

1. *As to administration.* Work in natural science to be required in grades eight and nine in the form of a natural development and continuation of the geography of grade seven. The special science units in grades ten to twelve *to be elective* save as they are required in certain courses of study. These upper science units to have an administrative equivalence with similar collegiate courses.

2. *As to content.* The work in the junior high school to secure by its content a general appreciation of nature as interpreted by science, and clear knowledge of those great facts of nature of most significance to man. The illustrative material to be preferably of economic importance. There will be some standardization of minimal content.

3. *As to organization.* The content of this course to be organized in terms of procedure from simplicity to complexity, that which precedes contributing to the interpretation of that which follows. Basic study of inorganic phenomena will precede the basic study of organisms, although the relations of all phenomena to life, especially to human life, will be emphasized throughout. The study of man as basic material will come at the end of the course.

4. *As to method.* No single method of teaching will prevail. The quiz-conference with illustrative material at hand (i. e. apparatus or specimens) will be the most frequent type of lesson. Didactic method will be largely employed to secure an adequate basis of facts for pupils' reasoning. Deductive-inductive exercises will be used as found desirable, which will depend largely on local circumstances.

5. *As to aim.* Save as to content, there will be no peculiar aim as apart from the general aims of all school work. No peculiar virtues will be claimed for science instruction and denied of all other types of instruction. Elementary science will do its part in the development of intelligent, healthy, truth-loving, and truth perceiving young people.

Mathematics In The Six-Year High School

By E. H. Taylor, Charleston, Ill.

In constructing a course of study in mathematics for a six-year high-school, I should wish to assume that at the end of the sixth school year the pupils had mastered the fundamental operations with integers and fractions. I know that most American boys and girls do not have this mastery. Neither do they in other countries if the Reports of the International Commission on the Teaching of Mathematics are to be believed. This mastery is indispensable to satisfactory work in high-school mathematics. We all believe this, no doubt. But we need more active conviction on the part of school administrators, conviction that will do work in making this mastery a fact.

The time now given to arithmetic in the seventh and eighth grades is about equally divided between percentage and mensuration.

Most of the time given to percentage and its applications is not given to the study of mathematical relations, but to learning certain rules of business procedure and some elements of commercial law. The difficulties met here are not inherent in the subject matter, but arise because the subject matter is beyond the experience of the pupils, for example stocks and bonds and exchange.

The computations actually needed in business are simple, and in practice are not hard to master, such as finding interest and discounts, and filling out blank forms. But in making courses of study in arithmetic for the seventh and eighth grades there has been recognized the desirability of including some material that requires a higher degree of mental effort and of abstract and formal thinking than is used in these simple business calculations. For whatever private stock of ideas one has as to merits of the practice, it is perfectly evident that most courses of study in arithmetic have been made to contribute to practical and to cultural ends. Hence to satisfy this assumed need for some material through which the adolescent could be given some practice in reasoning and generalization, many difficult problems, difficult for one with only the methods of arithmetic at his command, have been introduced into the arithmetics.

Mensuration as taught in the grades is largely concerned with computations of areas and volumes. Many of the difficulties here have been introduced to give practice in formal reasoning.

It seems to be useful to think of the course in arithmetic for the seventh and eighth grades as made up of a considerable number of business rules and their simpler applications; of formulas for volumes and areas; and of a large mass of applications of more or less difficulty.

In making a course of study for a junior high school I should wish to retain the simpler phase of business arithmetic in the seventh and eighth years, making perhaps a different distribution of topics so that a pupil might be exposed

to problems in percentage over a longer period of time. The more difficult parts of commercial arithmetic I should certainly want to postpone to at least the ninth year so that the pupils may come to it with more maturity, experience, and mathematical knowledge.

The work in mensuration needs to be reorganized so that the pupil not only learns formulas, but gets a connected body of knowledge concerning the properties and relations of geometric figures, and is led through the concrete development to the abstract development of geometric truths.

I believe that exercise in abstraction and logical deduction, some opportunity for which should certainly be given in the junior high-school course, can be much better given in the elements of algebra and geometry than with our present array of problem material. The elements of algebra and geometry offer much simpler material than is usually found in the difficult problems of our arithmetics. But the most important argument for the introduction of algebra and geometry into the seventh and eighth grades is that the mastery of the ideas and methods of algebra and geometry furnishes tools that contribute enormously to the solution of problems. There is no good reason why pupils should not be put in possession of these tools much earlier than they now are.

It is estimated that algebra is now taught in either the seventh or the eighth grade in from thirty to thirty-five per cent of our large cities. The percentage in the country at large is of course much less.

This instruction in algebra has often been unsatisfactory and has in some cases been discontinued. The reason seems apparent. There has been transferred from the ninth grade to the seventh or eighth grade, with little or no change, a portion of highly abstract and formal algebra. The most of us think that material needs reorganization to be suitable for the ninth grade. Much more is this true for the seventh or eighth grade. This algebra has been formal and uninteresting. It has not been well taught in the grades. Furthermore, almost exactly the same material has been repeated in the first year of high school. Here it has been less interesting than before for it is stale. This algebra in the grades has not been of much value to the boy who does not go to the high school, because for the amount given him it is not the proper material; neither does it appeal to the boy who goes to high school who has to repeat it. Ideal conditions for making a subject a failure.

The pupil who is well trained in arithmetic in the first six grades will have a fair degree of speed and accuracy in the fundamental operations. This facility must not be allowed to lapse, but must be increased. Hence the course in mathematics in the high school, especially in the junior high school, must put much emphasis on drill in computation.

In making the course of study in mathematics for the junior high school these things should be emphasized:

1) Practice in computation, with insistence on checks. This practice is to be obtained by dealing with much the same problem material as is now used in the seventh and eighth grades. In addition there should be practice in algebra in substitution in formulas and the solution of many practical problems, and many numerical exercises from geometry.

2) The elements of algebra. The prominent features here should be practice in generalization, and applications to useful problems involving formulas and the solution of equations.

3) The development by the use of construction, measurement, and observation, of a connected body of geometric knowledge. This treatment shall not only aim to supply the mind with geometric facts, but shall lead to the mastery of methods of procedure in observational and demonstrational geometry.

These ends could be accomplished by means of a combined course of arithmetic, algebra, and geometry extending through the seventh and eighth grades. In the ninth year a course in algebra could be given. A wider range of geometrical applications could be given than is possible under the present arrangement. The mathematics of the tenth year should probably be demonstrational geometry. In the last two years of the senior high school there could be offered advanced algebra, solid geometry, trigonometry, and perhaps one other subject.

It is well known that as compared with the children in the other leading nations of the world, the pupil in the American schools is at the end of the second school year, so far as accomplishment in mathematics goes, one half year behind; at the end of the sixth school year, one year behind; and at the end of the twelfth school year, two years behind. There are a number of factors contributing to this result, longer school year, better prepared teachers, economic and social pressure, to mention a few of the most evident ones. But one of the most important factors is the earlier introduction of algebra and geometry, and their pursuit over a longer period of time. Algebra is begun in the sixth school year in France and in the seventh in Germany and Austria. Geometry in some form is begun in all these countries in the fifth school year. The courses of instruction in these subjects run through from six to eight years. It is quite reasonable to suppose that our results in mathematics would be much improved by an earlier beginning in algebra and geometry and a longer course.

Thus far I have spoken mainly of the redistribution of the material in the course of study in mathematics. Some of you no doubt, perhaps most of you, think that it is much more important to consider the changes that should be made in the subject matter itself. There are to-day some well defined tendencies in the teaching of secondary mathematics. The two most important are: To make the study of mathematics less formal, and to make it more intuitive, concrete, and practical; and to give this instruction more unity. One important unifying element is the notion of a function. These ideas should operate in construction of a course of study for a six-year high school about as for other schools, it seems to me. The tendencies toward simplification of the subject matter and emphasis upon simple applications become increasingly important as algebra and geometry are offered earlier in the grades.

I have recently examined the courses of study of a number of junior high schools. In the most of these the course of study is the conventional one, arithmetic required in both the seventh and eighth grades. In one a composite course of arithmetic, algebra, and geometry is offered in the seventh and eighth grades, and in two others such a course is offered in the eighth grade. No general

conclusion is to be drawn from this small amount of data, but so far as it goes it indicates that the change from the four-year to the six-year high school has had but little effect upon the organization of the course of study in mathematics.

Latin in the Junior High School.

By Professor H. J. Barton

Mr. Chairman:

The Roman had the distinguishing quality of assimilating any good thing that came along. Sometimes it was the coin of the realm and yet again it might be philosophical or artistic standards or yet again standards of education and so as a Latinist I need offer no reason for the interest that I feel in the topic you have under discussion this morning. And again it may not be out of place to say that I am not speaking simply from the standpoint of the college teacher for it was my great good fortune, my great, great good fortune to be in high school work for many years. I can not place any great value on what I may contribute to this discussion but shall endeavor to tell you how Latin teachers feel on the proposition and what the classical people are actually doing to help solve the problem.

I think it is quite obvious that Latin teachers as a body are in favor of the Junior High School or of the Intermediate School should you prefer that term. I base this opinion on the literature that has been published bearing on this point and on opinions as I have heard them expressed. This is precisely what would be expected. We are not over conceited—perish the thought—not over satisfied with a situation just because it is; we claim a saving residuum of common sense and granted that, we have long wondered what was the matter with the seventh and eighth grades and we have longed to reach out our hands and grasp for language and literature those whom we have thought would profit much if so rescued.

The other day, I read ten indictments against the present order. I wonder if any of you care for them. Perhaps not. And yet you may be from Missouri. Here are one or two "A large percentage (about 40) of the work of the seventh and eighth grades is wasteful, wearisome, and futile review." Again "much of the seventh and eighth grades' work is relatively of little value, certainly at the time when it is given." "There is no evidence of marked progress in the essentials in the upper grades" and just one more, "a large percentage of the pupils in the upper grades are eliminated or retarded." We draw a long breath and repeat the old lines "since I am so soon done for, what was I ever begun for." And then the gentleman from whom I have quoted reinforces his statements with grafs that seem to show that if you grant that the data is representative, then the seventh and eighth grades as now organized had better depart to outer darkness and do it quickly too. Most Latinists make a sharp distinction between education and training for a vocation. Neither is absolutely exclusive but in general the distinction is sharp enough. We do not raise the question whether both can be carried on successfully in the same school and at the same time. If we may judge from the tremendous resolutions of the various educa-

tional associations it is pretty clear that if the two processes are not carried on side by side then the country is destined to utter and complete destruction.

This is not now under discussion. But as regards EDUCATION, the Latinist is fond of the old figure used by Dr. Harris. Do you recall it? He said education might be likened to a man shut up in a pentagonal tower and who dug his way to the light on each side. He made windows on the side of language, history, science, mathematics, geography. It was not a very easy matter digging through the wall but that was a part of the process. We Latinists are largely interested in helping the man to dig through a window on the language side. Not entirely to be sure for the other windows also light up the mind but still we have all we can do in trying to help the man on the language side. We have long believed we could help matters if we could get the student to dig at that language wall at an earlier age. Pronunciation, forms and vocabulary, and that sort of assimilation that comes from long familiarity are the implements with which he digs and it is well understood I believe that such are far better made while a student is ten or twelve rather than fourteen or fifteen.

To drop the figure and put it another way, we have believed that we could contribute far more to logical thinking if we could take students at the seventh grade than at the eighth or ninth. And then we have believed that we could contribute to the knowledge of the structure of English as it is possible in no other way. As it is now, there is no such knowledge anywhere save for the Latin student. The seventh grade says "It is not in me" and the eighth grade says "It is not in me." Will you pray tell me where it is? Of course you can say that there is no such thing as English grammer but you can convince no one who knows English.

Now I am not here to argue these points but to simply tell you what we think and since we are so important a part of the English language, "we" says Latin "are tremendously interested in what the administrative section has in mind. Please then understand that we are greatly pleased that you school men are at work at this problem and this because our students begin Latin at fourteen or fifteen while across the sea the study is begun between ten and eleven or even earlier. In 1903 the famous committee of ten made its report and based its recommendations on the standard high school. They had a little prophetic vision but it was very little. In hesitating phrase they hoped that in some way there might be found a way whereby Latin might be begun earlier but it was a hope—a wish rather—there was no vision. All the recommendations pertained to the existing order—all overlooked the possibility of any reorganization of the grades. And yet to-day in many schools systems, this reorganization has been effected. We are moving fast. That is you are moving fast. Can the Romans keep up? I think so. The Roman was always found at the finish. Let me tell you what we have done officially. The whole territory of the United States is organized into six classical Associations, namely—the Classical Association of New England, the Classical Association of the Atlantic States, the Classical Association of the Middle West and South, the Classical Association of the North Pacific States, the Central California Classical Association and the Southern California Classical Association. Of these the Classical Association

of the Middle West and South is the largest. Last year its membership was about 2000. It is I believe one of the largest Associations of classical teachers in the world. At its meeting at Nashville, last April, a committee reported on the study of Latin in the seventh and eighth grades. The committee consisted of Olivia Pound of Lincoln, Nebraska, Anna S. Jones of Grand Rapids, Michigan and W. L. Carr of the University High School, Chicago Illinois, Chairman. This report will appear in the near future in the Classical Journal. His committee was continued and will be expected to keep the Association advised of progress in the field assigned. Mr. Carr has placed his material at my disposal and from it, I summarize as follows—

But first quoting from Mr. Carr—"We believed that the offering of Latin in the seventh and eighth grades depended largely on the adoption of either departmental teaching in those grades or the more thorough going change in organization and administration known as the 6 and 6 or 6 and 3 and 3 plan. Questions B. C. D. and E. were framed to get information on this point.

Question A was as follows: "Is Latin offered in your schools below the ninth grade," "Yes" 40, "no" 106. Of the 40, 17 offered it in the seventh grade.

To show you where they are located I enumerate—

Baltimore, Md.
Boston, Mass.
Charlotte, N. C.
Cincinnati, O.
Columbus, O.
Grand Rapids, Mich. — 17 in all
Lincoln, Neb.
Berkeley, Cal.
Concord, N. H.
Los Angeles, Cal.
Oakland, Cal.
Rochester, N. Y.
Salt Lake City, Utah
Somerville, Mass.
Tampa, Fla.
Worcester, Mass.
North Adams, Mass.

Beginning in the eighth grade (below high school) were—

Aurora, Ill.
Duluth, Minn.
Indianapolis, Ind.
Kalamazoo, Mich. — 9 in all
Iowa City, Iowa
Providence, R. I.
San Antonio, Texas
Scranton, Pa.
Waco, Texas

Beginning in the eighth grade (first year of high school) were—

Atlanta, Ga.
Austin, Texas
Birmingham, Ala.
Columbia, S. C.
Ft. Worth, Texas
Galveston, Texas
Houston, Texas
Kansas City, Mo.
Knoxville, Tenn.
Macon, Ga.
Mobile, Ala.
Montgomery, Ala.
Norfolk, Va.
Richmond, Va.

14 in all.

40 in all as above.

Question "B." Is German, French or Algebra offered below the ninth grade?" "Yes" 34. Question "C." Is there any form of departmental teaching below the ninth grade?" "Yes" 34. So Mr. Carr's contention of the necessity of departmental teaching or its equivalent seems to be justified as far as the evidence here collected can be interpreted. This conclusion is made more evident from the following question, "D". "Are your schools organized on any other than the 8 and 4 plan?" Of the schools reporting a foreign language or Algebra below the ninth grade the organization was as follows—

9 and 4, one
8 and 4, six
7 and 4, fourteen
7 and 4 and 1, one
6 and 5, one
6 and 3 and 5, one
6 and 3 and 3, five
6 and 3 and 2, one
6 and 2 and 4, two
6 and 2 and 3, one

and the schools not reporting Latin below the ninth grade and who reported on this question tabulated as follows—

8 and 4, eighty
9 and 4, four
8 with other plans.

Mr. Carr continues "For example,—schools offering Latin in the seventh and eighth grades who reported at all on question "C" reported "yes" and many of them reported "yes" on question "D;" whereas a great majority of the schools reporting no Latin in the seventh and eighth grades are wedded to the 9 plus 4 or 8 plus 4 plan. A large number of these latter (72 out of 96 reporting) have some form of departmental teaching below the ninth grade and about one fourth of them offer subjects such as French, German or Algebra".

You will note then the close connection between the reorganized high school and Latin and the further fact that departmental teaching has not placed Latin below the ninth grade in high schools with the usual organization.

No mention has been made of the plan followed in sending out the questions. They were sent to representative cities of the whole country. The list enumerated throws light on the general character of the cities to which Mr. Carr wrote.

So much then for a description in brief form of what the Classical Association of the Middle West and South has started to do. Its standing committee will do all in its power and the Association can be relied upon to do all in its power to favor the Junior High School.

A most important question remains to be mentioned—granted that the Junior High School is to be the form under which the present seventh, eighth and ninth grades are to appear, what should be the course in Latin. Should it be one, two, or three years and what should be the content and around what should the instruction be centered? I think that there would be almost a unanimous reply and it would be to the effect that the length of instruction should be three years. As to the central thought, there would be some difference of opinion. For myself, I believe that the Junior High School should be a unit and while its students should pass freely to the Senior High School, still it should be recognized that probably more than 50% of those finishing the Junior school will never enter the Senior. Believing this, I think considerably less time should be spent on grammatical drill and more on an endeavor through a larger reading than usual to acquire the spirit of the life of the Roman world. As a purely tentative course, allow me to suggest the following:

First Year—Forms and stories as "ora marituma."

Second Year—Forms and simple narrations; selections from easy poems; attention to derivation, with the purpose of showing the meaning of English words; practice in sight reading, employing such books as Nutting's Latin Reader, Gotham and Other Stories etc.; some Latin writing.

Third Year—Selections from Caesar, Sallust and Ovid; Latin writing.

The instruction of all three years should be supplemented with maps, photographs, slides, and a library that will furnish ample reading in history and mythology.

Lastly, it should be possible to substitute Latin for English if students so desire.

Social Science in the Reorganized High School

By Jesse H. Newlon, Decatur

The present social science instruction above the sixth grade of our schools is entirely unsatisfactory. It is unsatisfactory in the arrangement of courses, in the choice of subject matter and in the method of teaching. The social science situation is worse than the science situation but as yet it has not received as much publicity and notoriety.

Every one who has taught history, civics or economics or has seriously attempted to supervise the teaching of these subjects is keenly aware of the prevailing unrest. The book companies are making a heroic effort to meet the situation. Every year sees new texts illustrating the newest point of view. Associations of history teachers are struggling over the situation, listening to committee reports, debating, and resolving. In the smoke of combat only one progressive movement can be clearly discerned and that is the movement away from endless details of political, constitutional and military history to a greater emphasis upon social development and the spirit of customs and institutions. This movement is well illustrated in Robinson's essays on "The New History" with which the members of this association are all familiar.

This social point of view in history teaching is now gaining recruits every year. This point of view is based upon sound educational theory and is without doubt accepted by all present here this morning, and will, therefore, need no elaboration on this occasion. We may expect then to see within the next decade a radical reorganization of social science subject matter for as yet this point of view has had very little influence on our practice. This new subject matter will bring with it new and sounder methods of teaching. I would like to discuss the new subject matter and the new method, but I must hasten to a consideration of the organization of courses. At present there is utter lack of agreement as to how the social science courses shall be organized, in what years and in what sequence they shall be given, and as to what courses shall be required in the senior high school.

Let us consider very briefly some of the weaknesses and mooted points in the present program. In the first place there is general discontent with the history now taught in the grades. There is no agreement as to how much European history should be taught nor as to the grades in which it should be taught. At the present time European History is taught in a very elementary biographical and easy narrative form, some time prior to the seventh grade, usually in the sixth. Then the seventh and eighth grades are given over to American History and civics with the result that the vast number of boys and girls who are leaving school in the seventh and eighth, and even in the ninth and tenth years are going out with a very hazy notion of those great movements in history which have created our present American society. Teachers lament the fact that so little of European History can be taught in the grades but they see no means of increasing the amount without slighting American History. And it must be admitted that with the eight-four division of our common schools the situation seems hopeless. Relief can come only through reorganization.

There is, of course, discontent with the type of American History taught and disagreement as to whether or not time should be taken for separate instruction in civics. There is no doubt that five days per week for two years is none too short a time to master all the intricacies of colonial development, of the military movements of our great wars, and to learn the great array of seemingly indispensable details. Attempts have been made to reorganize the subject matter in this field and some improvement has undoubtedly been made, but even a casual examination of the best American history texts for the grades

now on the market will quickly reveal the vast amount of space devoted to mere political happenings. The result is that there is little time for civics. And when civics is taught it consists almost solely of mastering the details of government machinery and of learning the names of a lot of officers.

Discontent is equally as great in the high school. Ancient history is usually taught in the first year but there is general agreement among history teachers that the present texts and courses in ancient history are not adapted to the needs and intellectual capacities of first year students. The same criticism is made of the medieval and modern history courses as taught in our high schools. Either ancient history must be made a prerequisite or students are not prepared for the work.

Another unsolved problem in the senior high school is that of the courses to be required of all students. There is general agreement that some social science courses should be required but absolute disagreement as to what these courses shall be. There are still those who advocate ancient history as the social science constant. The ancient field is the best organized of all periods of history and is therefore more easily taught. Present day social and political problems are illuminated by a study of Greece and Rome. "Rome is the lake into which all streams of ancient civilization empty, and out of which all streams of modern civilization flow." But there is another group which holds that our high school graduates who will be the leaders in our democracy ought not to be sent out to take up the burdens of citizenship without a thorough understanding of our own national history and our own institutions. And this contention cannot be regarded lightly. On the other hand a third group holds that our own history and especially our present day social, economic, and political conditions can only be understood in the light of Medieval and Modern European History and that, therefore, these courses should be required of all students. If all the courses advocated by each of these three groups should be required three or three and a half units out of the sixteen units would be given over to the social science prescription in the senior high school alone, obviously too great a prescription.

Now the claims of each of these three groups are valid. No boy or girl should leave our public schools without a working knowledge of general history as well as the history of the United States. Only in the light of Ancient and Modern European and American History can the present social order be understood. The first duty of the school to the state which supports it is to turn back to the state citizens who can intelligently perform the offices of citizenship. The safety of the state depends on this. The student then must be made familiar with general and American History. This cannot be left to the high school to be done in a year or a year and a half. This has been attempted and found impossible. The one year general history course and the half year American History course have been generally abandoned.

As these courses are organized at present the time required to give to every student an adequate knowledge of general history and civics is prohibitive. It would require three and a half units in the senior high school alone. This end can be obtained only through a reorganization. In the few moments at

my disposal I shall suggest a possible solution. My only purpose in making this definite proposal is to show that this social science difficulty can be solved. The plan which I am about to suggest assumes the junior-senior high school organization on the six-three-three basis.

Those who are familiar with the curricula of French secondary schools know that the history work there is organized into three cycles. The work is developed as a spiral. Three times the student traverses the entire field of general history, each time doing the work more thoroughly than before. Now the advantages to us of a similar organization are quickly seen. No matter at what grade the student leaves school he would not be totally ignorant of world history. Under this plan the courses could be adapted to the mental age of the pupil. It would make possible a rational selection of prescriptions in the senior high school.

I propose, then, the following cycles composed of the following courses. The first cycle would include the first six grades. In these grades I would treat the entire field of ancient, medieval, modern, and American History. The work would at first be in story form, later in biographies and easy narrative. The second cycle would include the junior high school, grades seven to nine inclusive. The courses here would consist of European History five days a week in the seventh year and two days a week in the eighth. American History three days a week in the eighth and ninth years and civics, largely community civics, two days a week in the ninth year. This would make a total of three units required in the junior high school. The third cycle would consist of the senior high school. The following courses, covering the entire field of history and social science, would be offered: ancient, medieval, modern, English and American History, civics, economics, commercial, geography, industrial history, and sociology. These are the courses now offered. In this cycle the student would not be compelled again to traverse the entire field, but in my opinion there should be required of each student one year of history and one half year of civics. The student who plans to enter college could be allowed to satisfy this requirement by a European History course but it might be considered best to require the students in those curricula which do not prepare for college to take American History. In either case the student would be prepared for the work. He will have had good courses in both general and American History. It would be possible therefore, in the senior high school, to emphasize historical method as well as content.

The total number of prescribed social science units in the junior and senior high schools would, then, be four and a half. At the present time it is, in these six grades, seldom less than three and often four while some of the leading students of secondary education are advocating a prescription of three units in the senior high school alone.* The famous Committee of Ten of the N. E. A. included one unit of history in the nine prescribed units which they

*E. O. Sisson in Educational Administration and Supervision, October, 1915.

recommended for the high school. But a lot of water has run under the bridge since this committee made its pronouncement. If there is any common element that ought to be emphasized it is history and civics. The experiences of group life are the most universal of all human experiences. This same committee included in the nine prescribed units only *one* unit of science but recommended the prescription two units of foreign language. I venture to predict that the present N. E. A. Commission on the Reorganization of Secondary Education will recommend more social science and science and less foreign language.

Under this plan of doing the work in cycles which I have proposed the vexatious problem of prescriptions in the senior high school is solved. No student will go out into life short in his knowledge of significant world movements. This plan would also undoubtedly improve social science teaching because the courses would be better arranged logically, psychologically, and pedagogically. There would be a gradual development on this subject. There would be three treatments, each increasing in intensity. It ought to bring order out of chaos.

If such an organization of courses were adopted it would at the same time necessitate and make possible a reorganization of the content of courses. There would be a curtailment of the time now devoted to American History in the seventh and eighth grades. This would render imperative a more careful selection of subject matter and doubtless would result in a content of richer and more significant meaning to the students than at present. The writers of texts for these grades have not yet begun to catch the spirit of the "new history" as have the writers of high school texts. The whole subject of content and method in this field is of immense importance and must be faced in the immediate future but time forbids further discussion here. I regret particularly that my time will not permit my taking up the subject of civics.

The success of such an organization of courses as this depends upon the junior-senior high school plan. There are at least three reasons why it cannot be successfully administered under the eight-four division of the grades. In the first place it depends upon departmentalism; the teacher must be a specialist in the social science field and must be trained for this work in order to do the work successfully. Under the present eight-four division it will be utterly impossible to supply such teachers to the seventh and eighth grades. If there are to be different treatments of the courses to meet the needs of different curriculum groups the need of a specialist will be all the more imperative. In the second place there must be adequate equipment in the way of maps, reference books, and models, equipment which is expensive and can be supplied only where large numbers taking the same courses are assembled. For example, the creation of a library demands a trained librarian, if the library is to amount to anything; but a trained librarian is an expense which can be afforded only in large student bodies. Finally the offering of two and three hour courses demands a junior high school organization with longer recitations and a more flexible program than can possibly be arranged in an ordinary grade school.

Vocational Subjects.

By H. G. Schmidt, Belleville.

In the Manual Training Section of the National Education Association; held in Boston in the year 1913, several papers on trade training were read and discussed. Among these a certain Mr. Higgins, a prominent manufacturer of Worcester, read a paper in which he showed the urgent need of some specific training for those boys who did not graduate from the high school. He pointed out that manufacturers wanted more trained help,—help that could be placed in various parts of their great industries and where these boys could because of previous training soon acquire a mastery of the particular line that they were to operate. Mr. Higgins suggested an arrangement that we at the present time know as the part time school. This was six years before the plan materialized in Cincinnati and Fitchburg, Mass. He expressed his idea in these words, "A shop with a school and not a school with a shop."

Several speakers pointed out the educational value of manual training and its general utilitarian values without any further specific references to special trade training. It was a very enthusiastic meeting. At its conclusion Mr. Mann of Chicago University moved the appointment of a committee of ten to report the following year on the status of vocational training and the nature of the courses that might be offered.

The same section of the N. E. A. received the report of this committee in 1904. This report favorably recommended the adoption of some form of vocational training and suggested the line of work to be pursued. That report set the pace and from that time to this the question has been a very vital one in the scheme of education of any large and progressive community. That report was perhaps not the first document to take notice of the need of some definite form of vocational training, but from that time to this the subject has been one that has given occasion to more constructive thought than any other subject of secondary education.

From that time we have trade schools privately endowed and other schools that were supported by public taxation offering definite trade training. Now the movement is to place the vocational subjects side by side with other courses in a general high school and not seggregate the vocational students in a separate building from the academic students.

That some specific effort be made to train the great mass of students who never go to the high school, and those who do go, but never complete the four years of the school, as well as those who must go to work upon completion of their school career, is a proposition that calls for the most earnest thought of school men of the present day. The Commissioner of Education of the U. S. has shown in his report that 75% of the pupils enrolled in the grade schools never go to a high school and that they leave school without any special preparation for their life work. This fact alone must give us a subject for much concern, not to mention the large number of high school boys and girls who leave that institution without any definite preparation for their life work.

In 1909 Mr. James Parton Haney*, discussing the Milwaukee trade school established in 1906, said that to begin the training of boys for their trade at 16 years of age was too late in their lives for at that age the great mass of them would be out of the influence of the school and engaged in some employment which consumed so much of their time that they had little of that as well as little energy to continue their training in night schools. He therefore recommended that boys be allowed to enter the school as early as their twelfth year.

Since his recommendation the junior-senior high school has come into existence and has grown in general favor. Now the question arises what shall be the nature of the industrial subjects taught in these schools. If 75%, as the U. S. Com. of Education reports, leave the public schools before they reach the ninth grade, we must then expect that a large number will end their school career with the junior high school. We hope that many may be won over to three years more in the senior high school. But the probability remains that the great majority of the pupils enrolled in the public schools will leave the schools when they have completed their work in the junior high school. What special preparation can be given them to enter some trade or fit them for some special work? The expression that they must find themselves during this time is on every tongue. They must brouse about in the manual courses offered by the school and take a taste of each and then level their likes and dislikes to their tastes and thus be ready to choose their occupation, settle down to work and pass out into the great class of unskilled to regret their lot and condemn the school system that turned them loose in this fashion. It is also argued that a choice of occupation should not be made too early, that in the junior high school there must be more of culture and a broadening of the understanding. But what will this broadening of the understanding amount to when the boy leaves school and becomes an apprentice to a carpenter and must serve as a general run-about for the best part of a year because he has not the most elementary knowledge of the use of tools, because he can not apply his mathematics that he learned as an abstract science? Because so many pupils will leave school at the ninth year, I shall take the position that they need something more than an opportunity to find themselves, or to acquire merely a general cultural training. I shall therefore maintain that they should have some specific trade training, some specific vocational training. They should have something that they can take with them into life. That kind of training given them would make them feel that the school was as real an alma mater as the boys and girls who stay to continue their academic studies in the senior high school.

For all practical purposes the pupils of the junior high school may be considered in two classes. The one class will be composed of those who will continue their education longer than the junior high school. It is in this class where some opportunity should be given the student to find himself—to find himself for his special work in the senior high school. The second class of students in the junior high school, which will be the larger, will be composed of those who know full well and whose parents know that (the pupils) their children can not finish or even enter the senior high school. It will contain a

*The Annals of the American Academy of Political and Social Sciences. Vol. XXXIII. Jan. 1909, Whole No. 110.

subdivision of pupils who have been retarded in the grades and who can work to better advantage in the junior high school. This subdivision will have been promoted to the junior high school because of its age and because the grades can not offer work suitable to their years and their motor mindedness. It is for this last division and the class of which it is a part that some special trade training must be arranged.

In this discussion I shall limit myself largely to the building trades and attempt to show some work that could be done in the junior high school and then proceed to develop the vocational courses of these trades in the senior high school. For what is true of one trade will hold with the same force for the other trades as well, especially for the iron trades, agriculture, and the commercial trades. In keeping with these the domestic art and science courses must be considered on a par. They may be said to lead to home making and to serving or domestic service.

Work of this kind is being done at the present time and too in the public schools. In Bulletin No. 566 of May 1st, 1914, of the State (University) of New York you will find the following vocational subjects for the 7th and 8th grades. For the 7th grade: Elementary carpentry, cabinet making, wood turning, pattern making, molding (Play at molding).

For the 8th grade: Sheet metal work, plumbing, machine shop practice. This is the work for boys. Now for the girls, the 7th year: House furnishing and decoration, costume designing, millinery designing, dress making, millinery alterations, cookery. For the 8th year: House furnishing and decorations cont., costume designing cont., millinery designing cont., home nursing, millinery alterations, cookery.

Beginning with this year Oldtown, Me., has put these courses in the 7th and 8th grades. Philadelphia did the same thing. probably in the majority of the junior high schools at the present time the vocational subjects are mainly of the nature of manual training and domestic science, with a sprinkling of commercial subjects such as elementary bookkeeping, typewriting, and in some few instances short hand in the 9th year. But there is no definite purpose or aim. This is far better than no vocational subjects at all. But it is not sufficient.

It seems to me that without any great outlay of capital, at least without any greater outlay than is usually made at the present time, the following could and should be offered to the vocationally inclined youths:

Elementary carpentry, brick work, plumbing, painting and decorating, pattern making, elementary machine shop practice, elementary electricity. This work should begin the 8th year and continue through the 9th. The 7th year should be a year of preparation with general manual training as the vocational subject, a study of industries by visits to them under the direction and guide of a teacher. It is to be the year of finding self.

In addition to the shop work, such subjects as industrial history and geography as well as a more extended knowledge of the industries should be taught. Mechanical drawing, blue printing, and the reading of blue prints as

much as is needed for the particular trade must be taught. Whatever work about the school needs to be done should be put into the hands of these students and with the instructor as superintendent they should do the work. Any piece of furniture that any one of the students wants or his parents want, if within the ability of the class, should be done by them.

The vocational subjects should be the central theme about which all the other subjects should be grouped, toward which all the other subjects should contribute. Even the social sciences and English especially should aid in making a good prospective workman and citizen.

High School Athletics.

By Dr. W. J. Monilaw, University of Chicago.

[Editorial note.—It will be observed that this paper is editorially divided into two parts. This was the evident intention of the writer, as the character of the two parts will show. The first part presents a course of study with two charts. Part second is a discussion of some evils of interscholastic athletics. The two charts given in part one are selected by the author from several presented when the paper was read.]

Introduction. The School of Education of the University of Chicago has called upon all departments of the University High and Elementary Schools for their respective Courses of Study, which are to cover (1) Aims and Ideals of the Department, (2) Methods of presenting subject matter, with concrete examples, (3) Equipment and its uses, (4) Organization of department, (5) Results, if proven. It is probable that all these courses will be published the coming fall, each department having a pamphlet for its own course.

The Department of Physical training is preparing such a course of study, which is still in its early stages of development. What is said today about such a course has not the sanction of the school, but so far as this course of study is worked out it is presented for your consideration.

In presenting this matter the writer desires to call your attention to the close union between the so-called competitive sports, both intra and inter-scholastic athletics, on the one hand, and the so-called Gymnasium Work on the other hand.

One of our great athletic evils of today lies in the utter divorce of these two equally important interests. Like most divorces outside influences generally prey upon one or the other party to the divorce. In the case of the physical training divorce it is the athletic side that is affected. The athletic interests grow away, or are "drawn away", from their legitimate place, ideal and aims of a true physical educational nature are shelved, and a "winning team" slogan is substituted. A winning team is admirable, but it should be subservient to the many scholastic, moral and social aims and ideals.

One of the first steps toward athletic reform in either college or high school, and there is plenty of room for such reform in most places is to *eliminate from athletics* alumni, student, or townsman control of such athletics, whether that control be direct or indirect, whether it be great or little, and to *substitute absolute faculty control through the department of physical training.*

As we progress in this paper it will be seen how these two phases of physical training are linked together in at least one school; how closely related they are; and how both are being used toward higher aims that "winning teams".

We do not present this scheme as a perfect one, as ideally planned and executed. The plan is on its fourth year of trial and so far is proving quite satisfactory.

It is the consideration of the subject the following facts should be kept in mind: University high school has 400 pupils—200 boys and 200 girls; University elementary school has 350 pupils, both boys and girls. This course of study covers all 750 pupils, all of whom are taught physical training four times per week, and some are taught five and six times per week. Few schools, at least in the West, offer so much physical training which so far seems to be proving its worth in every way.

Physical Training

I. General Statement.

Aims and Ideals. Mind and body are halves of a whole in which the latter should be subservient to the former in its efforts to carry out its many purposes. Physical training is the development of the body so that it may directly and indirectly assist the mind—it is more than that—it assists in the development of the mind; in its results it is physical, mental, social, moral and aesthetic.

The central aim in physical training is *not* to develop the physical side alone, but also to be of great and vital assistance in the building up of the whole being so that simultaneously the two reach that state of preparedness of life's work.

It is the aim of the department to (1) develop in the mind of each student an understanding of the relationship between mind and body, the interdependence of each and to develop in the student a determination not to let one sacrifice the other, not to allow outside influences of a physical or moral nature to interfere with this relationship; (2) to make each student as physically efficient as possible, rounding out those apparently perfect physical specimens and correcting or ameliorating those faulty conditions of the imperfect which result from heredity or environment; (3) to develop a love of play, of out-of-doors, feeling that such a love will later in life prove a valuable asset for health, strength, happiness, and efficiency; (4) to develop co-ordination, grace, accuracy, quickness, correct posture, endurance, reasonable strength, sound vital organs, attention, and inhibition; (5) to develop through competitive sports the habits of fair play, sportsmanship, honesty, goodfellowship, co-operation, self subordination, and loyalty to school spirit; (6) through exercises and games involving a moderate chance of danger to encourage a spirit of gameness, of courage, of steadiness under fire.

Basis of Work. The work is based upon the assumption that each and every part of the body has its own vital function and part in the work of the

whole; that no part must be neglected; that an abnormal condition in one part must tend to lessen the efficiency of another part; and that of all parts of the body of the greatest importance from the standpoint of efficiency the vital organs, the respiratory, circulatory, nervous, and alimentary systems, should receive first and chief attention.

It is assumed that the great and vital test of efficiency is not one of physical measurements, or of sound appearance, or of great beauty, or of healthy sounds through the stethescope, or of good habits, but it is one of *actual capacity* for accomplishment. If an organ is a perfectly normal one, the final test of that organ lies in its ability to perform and accomplish in a perfectly normal way and amount.

In general the work of the department is based upon a thorough knowledge and understanding of physiology, anatomy and hygiene. A proper progression of difficulty, adaptability, and appropriateness of all exercises, plays, and games is offered from the first grade through the high school.

Physical Examinations. At the beginning of each school year and *before* the beginning of any physical work whatever, each new student is given a complete medical and physical examination. This examination includes (1) a history of the life of the individual from infancy; (2) age, weight, height, lung capacity, and several anthropometrical measurements; (3) examination of the eyes, ears, nose, throat, mouth, skin and vital organs; (4) an inspection of the body for bony defects and incorrect position and posture. Students who have in previous years gone through all of the above examinations are carefully re-examined at the beginning of the school year and notes are made touching upon the health history of the individual since the last examination. Those who were previously found abnormal are tested for improvements and efforts are made to ascertain if the recommendations of the previous examinations have been carefully attended, and a study is made of results. Thorough records of all examinations are kept on file.

The findings of examinations are compiled and presented to the Principals for their inspection and use. The condition of sight, hearing, posture, and general health are reported to the room teachers to gain their help. Students are so seated that their sight, hearing and posture will work to their best advantage. The room teachers assist in improving posture. The condition of all children is reported in detail to the teachers of physical training. Children with abnormal hearts and other defects which may be aggravated by strain are especially guarded. In the physical training roll-call books such students' names *are underlined in red ink.* Children unfit for physical training activities are excused from the requirements. Children unfit for school work are recommended for dismissal. Parents are given results of physical examinations—and in most cases follow the recommendations for treatment of abnormal conditions. This co-operation of the parents is one reason why fewer defects are found in students who have been with us one or more years.

Medical Inspection. All students who have been absent from school because of illness, must be inspected by the medical officer (and the medical

officers are members of the Department of Physical Training), before re-admission is gained. Records are kept of the nature and duration of the illness, the treatment, the school time lost. Students coming down with sickness, or suspected of being exposed to contagion are closely guarded, or excluded from school for a time.

COSTUMES. High School. The high school boys make a complete change of clothing for each class except that in social dancing. The required gymnasium costume for boys is (1) white sleeveless shirt, (2) maroon stockings, (3) gray flannel trousers, buckled at the knee, (4) white canvas, rubber soled shoes. For out-of-door work a sweater is required and the boys may elect the shoes best adapted to the sport involved. Each boy is required to have a locker where his clothing is well cared for. Lockers and locker contents are periodically inspected. Periodical laundering of costumes is required.

For all inter-class and inter-group elective work the boys furnish their own costumes. For all inter-scholastic contests the school furnishes that part of the costume which is uniform in school color and design. Shoes and other accessories are the personal property of the boys.

The required costume for the girls is (1) navy blue cotton middy blouse with blue dickey for freshman girls and white dickey for sophomore girls, (2) plaited bloomers of navy blue serge, (3) black stockings, (4) black leather gymnasium shoes, or ballet slippers. The out-of-door work requires white canvas, rubber soled shoes, white stockings, and a sweater.

Elementary School: In the elementary school the only required change is of shoes. Black leather gymnasium shoes are required for indoor work. Out-of-doors the boys do not change shoes. The boys remove their coats. The girls, who wear bloomers under their skirts, remove their skirts.

TEACHING STAFF. The weekly duties of the teaching force of the department consist of teaching or supervising (1) 90 periods of required work; (2) 20 periods of free play in the elementary school, including recess, noon, and after school play periods; (3) 40 hours of after-school activities in the high school; (4) 10 periods for medical inspection and office hours for meeting appointments; (5) 5 hours on Saturdays.

To accomplish this work the department uses (1) on full time five persons, (2) on two-thirds time one person, (3) on one-third time one person, (4) on student service one person. All members of the staff are trained for their special lines of work, be that dancing, gymnastics, play, atheltics, or medical inspection and examination. All take part in office work, assist in physical and medical examinations, and in other respects participate in the life of the schools as do teachers in other departments.

EQUIPMENT. The equipment consists of (1) three rather small gymnasia, well equipped for gymnastics, dancing, games, and indoor athletics; (2) locker rooms for boys and girls with showers, toilets, dressing rooms, and lockers; (3) three clay tennis courts; (4) about eight acres of ground given over to space for play apparatus, elementary school play field, a 220 yard running

track with 140 yard straight-away, jumping and vaulting pits, hockey, soccer, baseball, and football fields, mostly in grass; (5) atheltic paraphernalia, such as balls, bats, bases, etc.; (6) interscholastic athletic equpiment such as is necessary to equip the school teams in uniform of school color and design.

All equipment is well looked after by a special gymnasium attendant whose full time is at the disposal of the department.

The two offices of the department, one for men and one for women, are equipped with desks, filing devices, hot and cold water, physical and medical examination equipment, first aid outfits, and rest lounges and blankets for sick and injured.

Organization. Both exercise and recreation should fit into the daily program of the student. To this end the programs are arranged so far as equipment, space, and teaching force make possible. In the high school the requirement is four periods per week. The fifth day is devoted to vocal music and this subject may be considered semi-physical. In the elementary school the fifth day is used for music, manual training, or printing. In both schools the after-school activities make it possible for every student to get a daily round of physical training.

All students are held to the requirements with the following exceptions: (1) Those who are physically incapacitated for such work, including extreme cases of abnormal heart, spinal curvatures, and the like; (2) Those students who are temporarily ill. The acute stages of colds come under this head.

The requirements begin in the kindergarten and continue through the sophomore year of the high school. Undoubtedly it would continue through the high school if space and facilities were at hand. However, the high school electives make it possible for juniors and seniors to get the work and nearly all of them so elect. (See Tables of Statistics.) Attendance records are accurately kept, absences are reported, and delinquencies cared for.

A system of electives for high school boys is in force as follows: Boys who are in advance of their average class in physical capacities and who in class work show a fine attitude of deportment, sportsmanship, ambition, and spirit are permitted (and oftimes urged) to drop out of the required class work (with the exception of social dancing) three periods per week and to elect work in the following branches of sport during their respective seasons: Football, track and field athletics, soccer, basketball and baseball. In making this election they must attend these sports the first four days of each week and oftimes on Saturdays as well. All elective work is always suspended on Friday afternoons in favor of the weekly Social Hour. Upon the completion of one season of sport the student either goes back to the required class work or takes up a new sport. Attendance records are faithfully kept of all elective work whether or not it is being taken to fill a requirement. If taken to fill a requirement absences are reported and the proper excuses demanded for same.

Examinations—Grades. In the middle and at the end of each semester the record of each student is reported as in all other subjects. The grade is based upon attendance, deportment, class spirit, sportsmanship, courage, posture, and physical accomplishments. This physical accomplishment is based not so much on what exercises a student may do and how well he may do them, as upon the amount of improvement shown during the given period.

At the end of each school year certain tests are required of each student. These tests may include throwing a ball for distance or accuracy, kicking a ball, dribbling a ball and throwing a basket, running fifty yards for time and form, jumping for height and distance, running through an obstacle race for time and form. This race may include some rather formal exercises on the horizontal bar, parallel bar, horse, and buck, and may make demands of courage, gameness, and indurance.

Absenses. Students receive a passing grade if their work is satisfactory. They are given the grade of failure if their work is unsatisfactory. If the work done is satisfactory but the attendance is short of the requirement, the grade of incomplete is given. But six absenses are permitted irrespective of the excuse with the one exception that absenses made necessary by injury sustained in class do not count against the student. The grade of "Incomplete" is removed from the records during the Junior year by taking Physical Training to the extent of time lost previously.

Hours—Length of Periods. The length of the period in the high school is one hour. From this ten minutes is alloted to changing class, dressing, and getting to the gymnasium or play field, and fourteen minutes for getting from the gymnasium, bathing, dressing, and getting to the next class. This leaves thirty-six (36) minutes for participation in class work in gymnasium or on play field. This enforced haste in dressing and undressing is in itself a valuable lesson for most students. Boys who drop the requirement and take the elective more than double the amount of actual time spent on the field.

In the fall and spring all work ceases at 5:30 P.M., in the winter at 5:00 P.M. No student is permitted to spend more than ten hours per week (including Saturday) in physical training, not even excepting those students engaged in interscholastic activities, such as football.

in the elementary school the length of period is 30 minutes, five of which is consumed in changing classes and changing shoes and removing outer garments. The after school activities are scheduled between 3:00 and 4:30 P.M. daily.

Weather—Seasons. It is the aim of the department to conduct its work so far as possible in the open air upon the playgrounds and athletic fields of the school. In general the weather conditions of Chicago permit out-of-door activities during the fall of the year up to Thanksgiving and during the spring season after April 1st. Within these periods social dancing and the "Social Hour" are the only activities carried on indoors. (See Tables on Courses by Seasons.)

During the entire school year the noon, recess, and after-school play of the elementary school is offered in the open air. Children are required to leave the building whenever the weather permits. When work is done inside, the gymnasia are kept cool and well ventilated.

All play of the elementary school is supervised by the teachers of Physical Training, who are on the play fields always during recess and noon periods, and after school for certain groups.

THE SOCIAL HOUR. Throughout most of the school year Friday afternoons from 3:30 to 4:30 are given over to the Social Hour. No other interest or activity of the school is permitted to conflict with this happy and useful activity.

The program of the Social Hour is varied. At the beginning of the year the freshmen and new students are given parties or receptions; who are thus made acquainted and really made welcome into the student body; the Girls' Club entertains the new girls; the football and soccer teams are honored; or the Boys' Club entertains the new boys, or the entire school. Various holiday parties are offered. At Christmas time all pupils come with presents which are turned over to charitable institutions. Parties are given in special costume, such as a "hard times party."

The program consists of a quite informal good time with dancing, refreshments, occasional talks and demonstrations, and is in charge of (1) the department of physical training represented by one or more teachers, (2) members of the high school social committee, which is made up of parents and members of the faculty, (3) members of the faculty, and always the Principal and Assistant Principals.

The Social Hour is an institution which tends toward the elimination of the "clique spirit," the class spirit, race prejudice, and the like, and in turn develops a healthy school spirit and a democratic spirit,—it is a place where all get acquainted and all are on one level. So far it has proven well worthy of the rule that there shall be no conflict between it and other interests.

Courses By Seasons Required—High School Boys

	Fall	Early Winter	Winter	Spring
	October November	December	January February March	April May June
	7 weeks 28 lessons	4 weeks 16 lessons	11 weeks 44 lessons	11 weeks 44 lessons
	Physical	Training on	only four days	per week
Monday	Music	Music	Music	Music
Tuesday	Social Dancing	Social Dancing	Calisthenics (Daily) Horse— 5 lessons Bars— 10 lessons (Hor. & Bar.) Tumbling— 5 lessons Rings, Ropes and Ladders 5 lessons Plays and Games 5 lessons Basketball and other Games	Cross Country and Soccer on very cold days
Wednesday	Soccer Football	Track & Field Basketball		Baseball Cool Days Track & Field Warm Days
Thursday				Tennis
Friday	— High —	—School—	— Social —	— Hour —

Courses By Seasons—Elective—High School Boys After School Activities

	FALL	WINTER	SPRING
	October November	December January February March	April May June
	.... 7 weeks	.... 15 weeks	.... 11 weeks
Monday	Interscholastic Football 5 days per week	Interscholastic Track and Field 4 days per week	Interscholastic Track and Field 5 days per week
Tuesday	Interscholastic Soccer 5 days per week	Interscholastic Basketball	Interscholastic Baseball 5 days per week
	Swimming 2 days per week	Swimming 2 days per week	Interscholastic Tennis
Wednesday	Tennis Daily	Interclass Track 4 days per week	Interscholastic Golf
	Interclass Soccer 2 days per week	Interclass Basketball 2 days per week	Interclass Track and Field 5 days per week
Thursday	Interclass Football 3 games during fall.	Intergroup Basketball Limited weights 2 days per week	Interclass Baseball 2 days per week
			Interclass Tennis Daily
Friday	3:00 to 4:30 P. M. High School Social Hour. (All the above social activities waived on Fridays during the fall and winter in favor of the Social Hour.)		
Saturday			

II. *Some Objectionable Features of Interscholastic Athletics.*

1 The Psychological Condition of Students, Players, Coach and Faculty During a football season.

The desire to win is inherent in all of us. We are not normal if we do not try to win whatever we attempt. With boys this desire to win is paramount. If scholastic attainment stands in the way to their goal, they will leave no stone unturned to get around a requirement. Leniency once shown is but a further stimulus to them. Proper rules of eligibility rigidly enforced will always find a proper response in the mind of a student. But given a foothold through leniency he will make life a burden to the faculty. This is especially true if the coach or the alumni lead him to believe he is not getting a "square deal." Once a football team start a crusade against a faculty with the assistance of the alumni, a bad situation arises. Add to this a little pressure—very subtle—from the Principal, who may be dominated by one or more members of the school board, who in turn may have some sons upon the football team, and you have a typical picture of what is going on in some of our communities. The poor teacher is "up against it." He (or she) knows by intuition that he will not receive support of the Principal if he puts a boy off "that winning combination" and thus "loses the game to our dearest rivals." He knows that the students will be out of sympathy with him, that the town paper may make remarks, and that altogether his life for the balance of the term or year will be a sad one. What does he do? Why of course he waits till the end of the football season and then sends in his bad report.

This is exactly the situation that leads to bad scholarship, to an evil school spirit, to a lack of sympathy between faculty and students and between Principal and faculty. We find this situation in some degree in nearly every high school that has a football team of high ambition, ambition to win a league championship, a sectional championship, to make a long trip if they have a successful season, etc., etc. In extreme cases our teachers have sought new jobs; principals have gotten into deep water; football teams have become almost brute machines to run over their faculty and their opponents alike.

The REMEDY lies with the principal. He will always find his faculty behind him in a desire to uphold high standards. He should encourage his faculty in putting a boy off the team for a time early in the season for such an act makes the other fellows on the team "sit up and take notice." Let the faculty get in the first "punch," and the second, and the third, and do it early in the season and there will be no answering punch on the part of the students, the alumni, or townsmen, for the boys will do their work and will play just as good football and even better. A stitch in time saves nine, so does the bringing of one football player to time in the early season save the failure of about nine others at the end of the season.

II. The Control of Athletics by Organizations Outside of the Faculty.

A few years ago a certain high school team was in line for a championship. They received a wire offering them a game with a team about a hundred miles away. This offer meant a good trip for the boys and a bonus for the

athletic treasury besides. The offer was accepted. A week later the contract was broken because the above named school had been defeated by a second school and the offer was transferred to the winning school, which in turn accepted. The first school protested vigorously and the reply of the *Faculty Advisor* was to the effect that *"the commercial club of their city had said if they did not cancel their contract with the first school and play the second school, they would withdraw all financial support from the team."*

This situation is just what we have in many towns and smaller cities. The principal and faculty have apparently nothing to say. Between politics and financial necessity they "sit back and let the town element exploit the team to advertise the city as one of the 'coming cities' of the state." Neighboring towns have contracts broken; are mistreated on the home fields of their rivals; have poor officials "put over on them"; and many other tactics of low class business men and coaches of professional type. Many teams are supported by the town gambling element to such an extent that they may be sure of "winning their money" when they play their strong rivals. These "loyal" town supporters thus get back the money "they have so generously donated in support of the school's athletics."

The same thing is happening in our colleges and universities. I saw a game this fall between two prominent schools. The coach of one team and the athletic director had the gambling element solidly behind them. These gamblers were so familiar with the team's officers that they between halves and after the games locked arms with them and thus appeared confidential friends and advisers.

The remedy is absolute control of every phase of the school activities by the Faculty—and that control through the physical department.

III. Grandstands without Faculty Control and Thus Without Sportsmanship

All of us have heard from the stands such cries as, "Kill the referee"; "Get the Jew"; "Twist his neck"; "Slug him, he's dirty"; "The 'Ump' is 'crooking' you"; and the like. As a rule the sportsmanship of the crowd is but an echo of the sportsmanship of the team. If a team plays clean football, they are fellows of some character, or are coached by a man of high ideals, and their influence is felt throughout the student body. Let the team begin talking around the school's corridors about "what they are going to do to that 'nigger'" and "how the officials are a dirty bunch," and their very words come out of the grandstands at them at the next game. Nothing so hurts the game of football as such conduct on the part of the stands. This fall I saw at least two principals standing directly in front of their boys who were making such calls, calls loud enough to be heard all over the field, yet they did not even turn their heads, altho only five yards away. At one football game a player on one team, the visiting team, was a Jewish boy. During the latter part of the game he was greeted by such remarks as "get the Jew, get the hook-nosed Jew." Hearing this remark at one stage of the game when the teams happened to be scrimmaging close to the grandstand, which was made up of Catholic students, he stepped out of his place in the line-up, squared his shoulders and yelled "Read 'the Menace'". It was necessary

for the police to escort him from the field in a closed vehicle. The citation of this incident is not aimed at either Jews or Catholics; the fault is not with any religious bodies, it lies in our system of sportsmanship on the part of the team, the coaches, and the grandstand. The team must play clean football, the members of the team and the coach must talk clean football, and the faculty must demand clean football from the players and coach and supervise the sportsmanship of the grandstands. When this happens we will have more clean, live boys of character playing the game and more parents watching it.

IV. Athletic Awards

Are our football boys playing the game for the pure fun and enjoyment they get out of practice and competition? Or are they looking forward to the end of the season when they are given sweater, blankets, gold football fobs, and when through the laxity of coach or manager they "get away with" a football or two and their football uniform and shoes and stockings? We have heard of college athletes who have "earned" four sweaters in one year by playing on four teams. I have seen high school boys wearing their football shoes—minus the cleats and cleaned and polished—to school following a football season. Why all these useless honors? In five years at University High School no athlete has received from the school more than a simple letter "U," which has cost the school not to exceed 12 cents. He has purchased his own sweater upon which to wear his emblem. And yet he loves the game of football, has more school spirit than the average boy, and has never complained because his school does not imitate neighboring institutions who do offer sweaters, blankets and the like. We must eliminate these gifts. The boys may at times be honored, but not by gifts of articles which immediately take on the aspects of inducements to play the game.

V. Pirate Athletic Teams.

Every fall and every spring many teams are challenged to competition by teams which are not members of a league, which have no rules of eligibility or conduct, which harbor professional athletes, and which seek the highest honors of the athletic world. Such teams are as much pirates to the athletic world as were the "Captain Kidds" of the commercial world of two or more centuries ago. Legitimate teams in playing such teams must take on a huge handicap of age, or size, or weight, or experience, or of "profession," and must submit to terms of game conduct, and methods of sportsmanship, which are entirely foreign to high athletic ideals. How can we get rid of them? The public does not understand and therefore no support can be gained from that source or from the public's mouthpiece, the newspapers. Are we going to dismiss a boy for breaking the rule against joining fraternities, or for failure in his studies, or for other misconduct, only to find him within a few weeks competing against us on one of these "pirate teams"? There is a limit to such a thing and just at present it would seem that we have reached that limit.

The various high school organizations of this state and of surrounding states must make a determined stand against these teams. They must make

demands of the colleges who hold large interscholastic meets that they enforce certain rules and regulations which all good schools recognize as fit and proper and necessary. Already such a sentiment has gained headway in some leagues.

VI. Pirate Athletes

Just as we have *pirate* teams so we have *pirate* athletes. Let me give the history of one high school athlete as an illustration. The first year he was a member of a public high school team as a freshman and as such failed in practically all of his studies; second year attended another public high school where his work was unsatisfactory from the start and he was therefore ineligible for competition. Realizing that he could not compete at that school he transferred to another institution and within two weeks was competing for that institution against the best teams of that section. The next fall he showed up at still another institution for which he competed all year in football and other interscholastic sports, oftimes meeting in such competition all of the teams with which he was formerly connected. The next fall he showed up at still another school and after remaining for a few weeks "decided he did not like it" and is now at another institution and representing that institution he will this year compete against most all of the schools of this state. What are we going to do about it? Such a boy is easy prey for the proselyting coach or principal who under the guise of seeking students for his school is really running down athletes of reputation upon whom he may depend in his effort to put out a winning team, thus advertising his school. The action which will stop the pirate team will also put out of business the pirate athlete. When we have put out of our school a boy who has failed or otherwise gone wrong, we really owe the boys who remain and make good, protection against the pirate boy and team. We must make it a duty.

VII. Post Season Football and Intersectional Games

Why do we have school football teams? Because the boys demand they be allowed to play? Or because we see certain good results from such competition? If we permit the game for the latter reason, do we not get the results without prolonging the game after the regular season and without offering the boys the inducement of a long "joy ride" to another section of America? Are not the boys more contented in the long run and much better off scholastically and morally if they play the game for the sake of the game and stop on or before Thanksgiving? If we permit the sectional champions to make long trips for intersectional honors do we not thus make an inducement for other boys of the school "to come out for the team and get the swell trip East or West"? And does this not tend to keep the championship in this school and keep the other fellows down? It certainly does. Members of the faculty of nearly all schools which have permitted their teams to take such trips will nearly always (at least in private conversation) decry such practices and tell of the injuries done the boys.

In connection with such trips mention should be made of the methods of financing the same. Several such long trips have been financed by newspaper men and representatives of sporting goods houses, who having gotten

contracts for one or more games, approach the local school, offer so much for the playing of the game or games, and then pocket the balance, which in one or more instances has amounted to several hundreds of dollars. Is it any wonder that certain newspapers "rather cater" to certain teams?

Platform

It is time for some new planks in our athletic platform, some planks to replace old ones that have never been quite strong enough, and some entirely new plans. The following are suggested:

I. Freedom to the faculty in its handling of scholastic requirements.

II. Absolute control of all athletics by the faculty through the department of physical training.

III. Better sportsmanship upon the part of the team as well and the grandstand. This in turn means a coach of high ideals and a principal who will back him well.

IV. The giving of no award or "reward" save the school letter.

V. The abolishment of the "pirate athletic team" and the "pirate athlete" through laws which will protect the teams who are practicing high ideals and enforcing certain common sense regulations.

VI. The closing of the football season on or before Thanksgiving and the abolishment of all intersectional interscholastic contests.

Agricultural Section

The Agricultural Section of the High School Conference met in Room 553, Agriculture Building, November 19. Chairman L. F. Fulwiler, Mt. Pulaski, Illinois, called the meeting to order at 9:30 A. M. and the program was as follows:

I. Requirements for University Entrance Units in Agriculture.
By Professor D. O. Barto, University of Illinois.

Discussion led by E. D. Lawrence, Principle John Swaney School, McNabb, Illinois.

After much spirited discussion, the Agricultural Section voted the following recommendation to the faculty of the Agricultural College of the University of Illinois: That schools be credited in Agriculture up to four units for specific subjects such as agronomy, animal husbandry, horticulture, etc., providing the work is approved by the high school visitor. It was the opinion of the section that the one-year general course in agriculture should give way to specific courses of not less than one semester's length in single phases of agricultural work.

II. Using the Farms of the Community as Laboratories in Secondary Agriculture. By Mr. H. R. Pollock, Instructor in Agriculture, Township High School, Chrisman, Illinois.
Discussion led by Mr. J. H. Cairnes, LaSalle Township High School, LaSalle, Illinois.

III. The afternoon was opened by the third paper—
Vocational Opportunities in Scientific Agriculture. A. M. Wilson, County Adviser, Hancock County, Carthage, Illinois.

Discussion led by Dean Eugene Davenport, College of Agriculture, University of Illinois.

IV. Report of the Committee for Agricultural Text Books and Reference Libraries. By T. R. Isaacs, Instructor in Agriculture, Decatur High School, Decatur, Illinois.

The report of the committee on balanced courses of Agriculture in the high schools was omitted and the committee consisting of the following: A. W. Nolan, University of Illinois; Lorenzo Muckelroy, State Normal, Carbondale, Illinois; J. C. Hanna, State Department of Instruction, Springfield, Illinois, was continued for a report next year. Mr. Winfield Scott was appointed member of the permanent library committee to represent the Agricultural Section in the general conference committee. The following officers were elected for the coming year:

President, Lorenzo Muckelroy, State Normal School, Carbondale, Illinois.

Member of the Executive Committee, J. H. Greene, University of Illinois.

Secretary, A. W. Nolan, University of Illinois.

Papers and abstracts follow in the order of their presentation.

Requirements for University Entrance-Units in Agriculture

By D. O. Barto

The selection of the above topic for a place on the program of this section's meeting may be taken as reasonable evidence that in the minds of some who are directly interested in agricultural education there is a question whether the present entrance requirements for the College of Agriculture can not be modified somewhat to better meet the conditions of many who are intimately concerned by the ruling.

There are several points from which this question is to be viewed and each presents a somewhat different angle from the others.

The University as a whole, composed of an aggregation of colleges, each having more or less specific aims of its own which naturally influence the character of its instruction and to some degree differentiate it from the others,—the University as a whole, looking after what it believes should be fundamental training in all higher education, demands that a little more than a third of the preparation required for entrance of *all* University students, no matter what their plans for college work may be, shall be confined to work in English, and mathematics; in other words, 5½ of the 15 units that must be offered for entrance shall be disposed as follows: one unit in English composition, two units in English literature, 1½ units in algebra and 1 unit in plane geometry.

The College of Science and the College of Agriculture agree in their views that a student to handle successfully the courses which they offer should have not less than two years of scientific training in his preparatory work and so they each prescribe two units in science.

These more general demands have covered 7½ of the 15 required entrance units, and from this point the direction of the work of the prospective student of agriculture for the 7½ units which constitute the remaining half of his University preparation is left wholly in the hands of the College of Agriculture.

And here, naturally, the factor which has greatest weight in helping to decide what further subjects shall be required to complete the student's preparation depends upon the character of the work given in the various courses offered in this college and the opinions of the instructors as to what kind of previous training best fits the student to carry his work with greatest profit to himself.

In selecting the subjects for the remaining 7½ units for entrance, the college allows the student a very considerable latitude. If he so desires, from ½ to 3 of these units may be earned by work done in one or more studies of group "C," described as *limited electives,* constituting the vocational subjects, as follows: Agr. 1 or 2 units; Domestic Science 1 unit; Manual Training 1 or 2 units; Bookkeeping 1 unit; Business Law ½ unit.

Or he may meet the requirements by offering from 4½ to the entire 7½ units for work done in studies grouped in the University catalogue under the caption *List "B" Electives.*

It is of interest to notice how wide a range of selection in studies this arrangement permits. For instance, if there are reasons which dispose the student toward work in language, he has Latin, Greek, German, French, and Spanish, aggregating 17 units, to choose from, the only restriction being that not more than 4 units can be offered in Latin or German or French, not more than 3 in Greek or 2 in Spanish, and not less than 1 unit in any language. One additional unit in English literature beyond that already prescribed may be offered.

In the list of physical sciences including Physics 1 unit, Chemistry 1 unit, Physical Geography ½-1 unit, Geology ½-1 unit, Astronomy ½ unit, totaling a maximum credit of 4½ units, and the biological sciences—Botany ½-1 unit, Physiology ½-1 unit, and Zoology ½-1 unit (3), there is offered a generous selec-

tion, outside of the two science units previously prescribed, for the student whose inclinations or needs lead him to place an emphasis in his preparatory work on science.

In the list of social sciences the student may offer from 1 to 3 units of work in history, ½ to 1 unit in Civics, ½ to 1 unit in Commercial Geography, and ½ unit in Economics.

If mathematics attracts, ½ unit in Solid Geometry and ½ unit in Trigonometry are accepted. One-half to one unit in Drawing completes this list of elective studies from which the student must make his selections in getting his preparation for entrance to college.

Through this selection and grouping of prescribed and elective studies, each weighted with its credited allowance of entrance units, the University and College of Agriculture have expressed their views respecting the proper standard of admission to be met by those who would become students of agriculture here. Nor has this standard been fixed arbitrarily by the University. Representatives of the secondary schools have shared in the deliberations and served on the committees which decided upon the present rquirements.

But standards that served well the conditions of yesterday frequently are judged to be not the best for the conditions of today and tomorrow.

There is another view point from which this question is to be viewed and which presents a different angle from those already considered.

During the last few years there has been developing, all too slowly, a new class of secondary schools whose relations to the College of Agriculture are now and will continue increasingly to be of very vital importance. The agricultural high schools, that is, the high schools outside the large cities which are recognizing that their environment furnishes the opportunity and imposes the duty of doing a different kind of work, or perhaps it were better to say, of doing their work in a somewhat different way from the longer established preparatory schools with which we are familiar. In these schools it is being satisfactorily demonstrated that the study of agriculture may be as wisely and profitably carried by a student throughout the whole four years of the course as the study of English or Latin or German or French, and should receive the same entrance credits. It would seem to need little argument to convince that such a course properly planned and thoroughly taught would insure as effective preparatory training for the college student in agriculture as any other subject or combination of subjects covering the same amount of time.

There is another point in considering what constitutes the best sort of preparation needed to fit a student well for his work in the College of Agriculture which deserves attention. No one will question the claim that the boy who has lived, until he entered college, in a good farm home and who has acquired by years of experience a thorough training in the practices of farming has received a preparation of immense value in helping to fit him for his college work.

Each year the number of boys from the city applying for admission to the College of Agriculture increases. Many of these are wholly without farm experience and few of them have more than was gained by one or two vaca-

tions spent in the country. Under the present requirements for admission these boys enter the College of Agriculture on the same footing as the farm-bred boy. Indeed the town-bred boy usually has the advantage in that the facilities for school work in the city are generally better than in the country, and it is easier for the town boy to secure the school-earned units for admission to college than it is for the farm-raised lad.

Would it be an unreasonable request to make of the College of Agriculture that some recognition be shown, in the way of entrance credits, of the value of the practical training of the farm-bred boy? To do this would involve certain details to determine the character and extent of each boy's farm experiences. This might be left in the hands of the county agricultural adviser or be decided on the credentials secured from a committee of reliable farmers in each township, or easily determined by an examination conducted by the college.

The question that is suggested in this paper for consideration is as to the wisdom and justice of asking for entrance credits based on the possession of practical farm experience and training; and if this were allowed, should it be offered as a substitute for some of the entrance units now required, and if so, what units?

The Use of the Home Farm as a Laboratory for Secondary School Agriculture

By H. R. Pollock

Most of the leading educators of the country have agreed that agriculture should be taught as a separate science in the high school. The best method to use to obtain the desired result is still in the experimental stage. I believe that all of us will agree that the laboratory method should be used, but the great question is, how are we going to supply material to equip the laboratory for the teaching of farm crops and animals.

Most of our high schools are not financially able to own ideal types of farm animals, or small tracts of land for experimental purposes. I do not think the high school should conduct experimental plots. That kind of work should be left to the University. If the school attempts any of this work it should run large plots treated in the proper manner to obtain the best results. The school doing this kind of work should be provided with an attendant all the year. This attendant should cultivate the crops, collect data and also do the harvesting. Most students studying agriculture in the high school find it necessary to work at some other occupation during the summer months, and therefore can not undertake this task and make a success of it. If the school is not able to hire a man to care for its ideal plot, that school would be better off without gardens or plots around the school grounds. These places are often left to the weeds during the summer months, and we all know this type of careless work injures the student in after life. A student should be taught to finish the task he begins.

The only thing for the average high school to do is to use the surrounding farms of the community or the home farm of the student for laboratory material. The boy should be acquainted with the ideal type of farm

animal, or as near the ideal type as the instructor can find. He should also be shown the effect of the proper kinds of fertilizers on farm crops. The home farm is the place to find this material, and if it is not there, the student must see good crops on other farms.

I begin farm crops with the study of alfalfa, clover, and other legumes, such as soy beans and cow peas. These crops are being harvested about the time school begins, and I find that some of the students are interested in their own crops or the crops of their neighbors.

My class last year took up the study of each legume in the following order: alfalfa, soy beans, cow peas, and the clovers. The outline followed for alfalfa was as follows: the history and varieties were first studied, then the method of obtaining a good stand of alfalfa was taken up in class. After the students had obtained all they could find in books they were taken out in automobiles to study the various fields of alfalfa in the community.

In connection with the Chrisman Township High School are a group of men called by Professor Nolan, Agricultural Advisors. These men were with the class on their first alfalfa tour of the community. We had a definite outline to follow upon arriving at our destination. The owner of the alfalfa visited was asked the following questions: "Do you consider the raising of alfalfa a profitable business?" "How long have you been raising alfalfa?" "What is your method of obtaining a good stand?" "How much hay do you cut per year from an acre?" "In what condition must the plant be before cutting?" "How do you cure the hay?" "Do you intend to always have alfalfa on your farm?" "Do you inoculate your soil?" and "What kind of fertilizers do you use?" These questions are asked to give the students an idea of the man as an alfalfa raiser. This man is sometimes the father of one of the students, or a near neighbor of some student. Our Agricultural Advisors are a set of progressive farmers who raise alfalfa, rotate their crops and use all of the modern improvements found in the agricultural profession at the present time. These men being alfalfa raisers, discuss with the students and owner of the field the problems that come up in raising alfalfa.

While in the field the root systems, nodules, and insect pests are studied as they are found on the plant. This material is again discussed in the classroom. When the student hears and is a part of a discussion of this kind that student, I believe, will be better able to determine the right way to grow alfalfa for himself.

Soy beans and cow peas are taken up in the same manner. The advantages of raising soy beans are pointed out to the student by some farmer whose field we visit, such as their value as a late summer crop to take the place of wheat. The differences between alfalfa and soy beans are pointed out to the students, also the advantages of both as nitrogen gatherers. Such differences are always shown the student in the field, at home or on the farm of his neighbor.

Our next crop studied was the clovers. We find it is hard to locate fields of the different clover crops on the farms of our community. Red and sweet clovers were the only ones studied in the field. The work of bees and in-

sect pests were studied. This work was given by the instructor with the assistance of a farmer friend of the class.

The fall wheat is in good condition to study about this time, as most of the farmers who raise it have sown their fields, or the wheat is just above the ground. The history and varieties of wheat are first studied, then the boys are taken out to the country to collect data on several wheat fields including their own. The following outline is used in collecting this data: "When was the wheat sown?" "What were the three previous crops grown on the same land?" "What was the name of the variety?" "How was the seed bed prepared?" "How near is the present field to last year's field?" "What is the condition of the wheat at the present time?" The greatest question of all is the following: "Is the fly present?" This data is saved until the spring when the same fields are visited to note the effect of the winter on the crop. A search is made for the fly. Specimens are collected and this data is taken to the classroom to be compared with last fall's data on the same field. The fields are visited again after they have headed out. At this time the work of the fly shows better than at any other time.

Corn is the next crop studied. The history and varieties are taken up in order, then the various fields of the students and community are compared as to methods of cultivation. When the two methods are considered the students examine the roots and determine the percent of standing corn in each field. Two other fields are compared that have been planted with tested and non-tested seed. The students determine the per cent stand in each field. The pupils are next given field lessons in picking seed corn. A field near the school is a good place to practice this lesson. The various insects and fungus diseases that injure corn are next studied in the field. The judging of corn is studied in the classroom.

The growing of farm crops in pots may teach the lesson intended; the proper methods of fertilization and cultivation may be illustrated by a well conducted field experiment plot; but none of these things will leave the impression with the student so much as a comparison of a good and bad field of grain grown in the community, especially if one of the fields belongs to a student of the class.

This completes the study of the main types of farm crops. The next topic is the home orchard. The field work in this subject is distributed over a large part of the winter and spring. The various methods of pruning, working over old orchards and planting are carried on in the different orchards of the community. After the students are taught the methods of pruning, they are instructed to work on the home orchard. Credit is given students who do this kind of outside work. In the spring the class contracts to do spraying for several people around town and in the country, providing the parties furnish the spray material. The students mix and test the various sprays and apply them at the proper time.

Animal studies are the second most important topic on the farm and therefore should be studied at great length. My class last year took up the study of dairy cattle very extensively. We have a poor class of cattle in

our country except in two cases. These two herds are registered. Holsteins are within a half mile of the school. When the class was taken out to visit the best herd, they were told to collect the following data: Methods of ventilating the barn, sanitary conditions, amount of light, general appearance of the cattle, kinds of feed used, and the amounts fed each cow. With some of this data the class studied the methods of feeding and balancing rations for dairy cattle. The methods were then compared with those of the home farm of the boy. The results of all the problems were compared so that the boy could see all the mistakes in both places.

The class then took up the judging of dairy cattle. The best cows were picked for milk and fat production by the students, then all the cows were tested. The owner gave the class his cost of feeds and the receipts for calves, butterfat, and milk. With this data the students determined the loss or gain for the herd. Some of the poor herds of the students and community were studied in the same manner.

When studying beef cattle the class must see them to appreciate the good points of the business. Two of my students last year had four car loads of cattle at home. Our first visit was during the winter. The cattle were studied by naming and pointing out the various parts. The next exercise was directed as follows: each pupil selected, being guided by general appearances, a certain number of cattle that would, and would not, fill out well when placed on full feed. The same herds were visited again the day they were put on full feed. They were then compared with their previous condition by the class. One month from the day these herds were placed on full feed, they were visited again. The effect of a full ration began to show by this time. The class again took data on the conditions of their choice animals. From the three sets of data each student was able to determine for himself his ability as a beef cattle judge. This exercise proved to the pupil the truth of some of the rules that should be followed in picking feeders for one's own use.

The last topic studied was the home vegetable garden. The student worked out a planting plan for his home truck patch in connection with the study of the various vegetables.

The last, and what I consider the most important part of the course, was a one day trip over the country visiting ideal types of farm animals that could not be found at home. A friend and advisor of the class suggested some kind of a trip that would serve as a summary of the various topics studied during the year. We worked on this plan three weeks before our trip became a reality. We inquired by telephone and letter the location of the various subjects of interest. The class was dismissed from school one day, and with the instructor and the Schools' Farm Advisors we started out on our trip with five automobiles, and one motorcycle. There were 26 students, 3 advisors, and 1 instructor present. We visited some imported Clydes and Belgians at the first place. The good points of each horse was pointed out to the students. Our next stopping place was the home of Dr. Jones, of Sidell. The doctor gave us a lecture on the driving horse and also a long talk on the diseases of farm animals. The next place visited was the home of Mr. Harvey Sconce.

The students were given at this place an opportunity to see what an ideal country home could be when planted with the native shrubs and trees. Our next stop was the home of an International Live Stock exhibitor. Mr. Rice owns a few head of beef cattle that have taken first ribbons at the International. He is also a breeder of Morgan and Percheron horses, Poland China hogs and Jacks. He gave us a one hour lecture on the various animals, pointing out their good and bad qualities.

Our last stop was at the famous horse farm of Low Green at Indianola. The class saw a pasture with eighty brood mares with colts, also some very fast driving horses. Mr. Green lectured to the class for one hour on driving and race horses. He expected us to be with him one half day instead of one hour. The trip covered 55 miles and consumed 10 hours of time.

The students' criticisms of the trip were as follows: we tried to cover too much territory. The trip was too long for one day.

We must remember that one of the main objects in teaching agriculture in the high school is to help the boy determine the vocation he wishes to follow. He may not be surrounded at home by the very best of environment. His father may be one of the so-called misfits in the industrial world. This kind of surroundings gives the boy a discouraging outlook for the future when he thinks of taking up agriculture as a profession. The school may be very instrumental in showing the boy where he belongs by comparing the methods of his father, or some other farm that is operated like his father's, with a well conducted farm of the community. If the boy is agriculturally inclined, the ideal type of farm animal will appeal to him. I believe he should be shown the best type of farm animal and farm crop that can be found by the instructor in the community. The only way the average high school can accomplish this task is to use the home farm or the farms of the community for laboratory purposes.

Vocational Opportunities in Scientific Agriculture

By A. M. Wilson

Whether there are vocational opportunities in scientific agriculture depends very largely on the point of view one takes. If one desires to amass great wealth or attain fame scientific agriculture will not appeal to him at all. But before we assert that there are vocational opportunities in agriculture, we should make a survey of the business to determine what one may reasonably expect of it.

It must be remembered that the question is not whether agriculture presents the greatest vocational opportunities, but it is whether it offers opportunities worthy of consideration by our best young men and women when considered in comparison with the opportunities offered by other vocations.

It must not be forgotten that the business of agriculture is to clothe and feed the race. Surely no industry can have a broader field for marketing its commodities. One might admit the breadth of the market and yet question whether the demand for the commodities of agriculture will remain in such a proportion to the supply as to insure a reasonable profit to the producer.

There is no way to get a better indication of what the future will bring in this matter of supply and demand than to examine the past. However the nation seems to have two distinct periods agriculturally, the one from the beginning of the nation to about 1880-90. During this period we had broad acres of fertile land to the west of us that could be had for the asking. Our people were very largely engaged in agriculture. We did not have a great urban population to feed and clothe. Foreign markets were difficult to reach and did not consume the surplus as they do now. The result was that the price of agricultural commodities on the whole did not give the producer a reasonable profit.

Beginning with 1880-90 our urban population began to grow rapidly, and our agricultural land could not increase as the demand for commodities increased. We were approaching a time when there would be no more fertile land to the west that could be brought under the plow. Since 1880 our population has increased 80% while our improved farm land has increased 68%. From 1900 to 1910 the population increased 21%. During the same period the acreage of all cereals increased 3.5% and the productions of cereals increased only 1.7%.

Cattle and hogs are the two greatest sources of meat supply for our nation. Here again we find the supply falling behind the increase in population. While the population of the country increased 80% cattle increased 26% and hogs 19%. This does not take into consideration the fact that a great part of our improved farm land is producing less and less as the years go on. Our own great state Illinois produced 19 million bushels less cereals in 1910 than she did in 1900.

It has been said that one can take statistics and prove anything; but it would seem that it would be difficult to take the statistics as we find them and prove that the supply of agricultural products is keeping pace with the demand. In view of these facts it would be difficult to see why one should hesitate to choose agriculture for want of good markets for his produce. After one is satisfied that there is a demand for the kind of business he anticipates he usually asks whether the business per se is worthy of his efforts. Whether it demands men with iron in their blood or whether a weakling will do.

Our nation is an agricultural nation. Our balance of trade is maintained largely by agriculture. It is usually thought that the prosperity of a nation is guaged in the main by its balance of trade. Certainly this balance of trade can not be maintained by weaklings. Again if one takes all the money invested in manufacturing and doubles it he will lack more than our total national debt of having a sum equal to the value of the farm property of this country. It is hard to realize and yet it is a fact that the ordinary farmer with a quarter section of good Illinois land has an investment larger than the capital stock of many of our banks, and much larger than most merchants. It requires men of business ability to handle this capital successfully.

But go a step further and see what is demanded of the scientific farmer. He must be a business man of the A type so that he may determine the profitable lines of activity and discard those that either cause a loss or fail to make a profit. This is by no means an easy task because the farmer must use judg-

ment in determining whether the loss was due to abnormal season, the ravages of insects, abnormal markets or whether there was some other cause that would not be expected to occur again.

He must be able to use the ordinary principles of mechanics because farming today is done very largely with machinery. He may get along with very little knowledge of machinery but if he does he is not a scientific farmer. He must be capable of making gasoline engines, tractors, automobiles, binders, plows, steam engines and threshing machines his servants. He must not be a servant of them. The man is the multiplicand and the machinery is the multiple. But if the multiplicand is zero, it matters not what the multiple is, the product is zero. This is just as true in agriculture as in mathematics.

There is still another great field, full of problems for the scientific farmer. He must know zoology, botany, physiology and chemistry if he is to make the most of his opportunities. He needs to know the physiology of his plants and animals if he is to supply their needs. He must understand the chemical changes that take place in his soil so that he may retard those that injure him and bring about those that are beneficial to him.

The fact that all of these demands are made on the farmer is one of the blessings of the vocation. They undoubtedly give him the opportunity to develop intellectually, morally and physically. Most vocations tend to make one a specialist in one line to the absolute neglect of other lines that are necessary for the greatest development of a man.

Think of the limiting influence it has on one to go through life doing something that must be repeated over and over without any variation whatever, for example in the packing industry it is the work of some men to chop the hams from the middlings. No variation or change throughout the day, week or year. It is true that most farm operations must be repeated over and over, but there is sufficient variation and progress to give mental and moral development. After the prospective farmer has been convinced that there are ample demands for his products and that the business is worthy of the best blood of the land, he may justly ask what are the probabilities of finding a solution to at least a part of these problems?

In reply one could say that there is no other vocation that is receiving more of the public funds for investigation than agriculture. The United States Department of Agriculture is spending approximately 20 million dollars per year in helping solve some of these problems. Every state in the union is adding to this large sums for the same purpose. Railroads, manufacturers, merchants, banks and many other agencies are contributing to the same end.

Over a thousand counties in the United States have employed trained men to go personally to the farmer and help him work out some of the complex problems. Colleges and Universities are realizing more and more that they must respond to the demands made by agriculture.

Last of all, but probably first in importance, the question of home must be considered. There was a time when the farm home was looked upon as a place for uncouth people to spend a life of drudgery. On the other hand, if one were to read some of the magazines and papers on country life and then go to live as one actually finds life in the country, he would find many of the pictures overdrawn.

The country home is a splendid place to spend a life of toil and service. That is all that any one has a right to ask. If my hands are soft it is because some other man's hands are horny. If my brain has time for an undue amount of leisure and frivolousness, it is because some other man's brain is working over time.

The farm home is not a paradise of idleness and gluttony nor is it a place of solitary, servile drudgery. During the last twenty-five years much has been done to bring to the farm home those things that make it a good place to live. Improved machinery has enabled the farmer and his family to do the work of the home without undue labor. Rural mail routes, better roads and better modes of travel have removed its isolation.

If one goes into the farm homes just as they come today he is impressed with the fact that where the people are not living as people have a right to expect to live that it is not due to poverty or necessity, but lack of the knowledge of how to live is the main cause. They have failed to be scientific, that is, they have failed to use the knowledge that has been organized for them.

One of the great assets of the farm home is the opportunity it gives the family to be under the influence of nature and all its beauties instead of coming in contact with artificial life found in the cities. Of course all life found in the cities is not artificial but it is far more so than in the country.

In the city there are perhaps but one or two members of the family that contribute to the maintenance of the family, while the farm home offers an opportunity for each member of the family to contribute to the activity of the home.

The picture show, club, saloon, streets and other places of amusement are sapping the unity from many homes. The country home offers a splendid opportunity for the family, the greatest social institution in existence, to stand as a unit and develop boys and girls into men and women capable of doing the world's work.

If you high school men and women want more educated strong boys and girls to choose agriculture for a life work hold up before them the problems that are just as complex as the problems of any other gigantic industry. Appeal to the red blood in them. Make them realize that it is no place for a mollycoddle and that the rewards will compare favorably with any other line of business and you need have no further concern about the number that will choose agriculture for their life work.

REPORT OF COMMITTEE ON TEXT-BOOKS AND REFERENCE LIBRARIES.

We, the committee on Investigation of Agricultural texts and reference texts, respectfully submit the following report:

If one wishes to teach seventh and eighth grade agriculture the following books may be used:

Agriculture for Beginners—Burkett, Stevens & Hill, Ginn & Co., for text and laboratory.

For laboratory only—Elementary Experiments in Agriculture—Dadisman, Webb Publishing Co.

The committee does not recommend a one year general course in agriculture. For this purpose, however, if such courses are given, Benson & Betts—Bobbs-Merrill Co.—may be recommended from the standpoint of home project work. Waters Essentials of Agriculture—Ginn & Co.—is to be preferred from the standpoint of text material.

Nolan—Agriculture with Home Projects.

An Outline Course for one year (general course), Superintendent of Public Instruction, Des Moines, Iowa.

For courses arranged by semesters, which includes one year courses, not general, the committee recommends the following:

Farm Crops.

"Field Crop Production", Livingstone, Macmillan, N. Y. 1914.

"Field Crops", Wilson & Warburton, Webb Publishing Co., St. Paul, Minnesota, 1912.

Soils.

"Soils & Soil Fertility", Whitson and Walster, Webb Publishing Company, St. Paul, 1912.

Animal Husbandry.

"Animal Husbandry in Schools", Harper, Macmillan, N. Y. 1913.

"Beginnings in Animal Husbandry", Plumb, Webb Pub. Co., St. Paul, 1912.

Dairy Husbandry.

"Dairy Farming", John Michels—Published by author, Wauwatosa, Wis.

Farm Mechanics and Agricultural Engineering.

"Agricultural Engineering", Davidson, Webb Publishing Co., St. Paul, 1913.

Farm Management.

"Farm Management", Warren, Macmillan, N. Y., 1913.

"Farm Management", Boss, Lyons & Carnahan, 1914.

Horticulture.

(No general text.)

"Popular Fruit Growing," Green, Webb Pub. Co., St. Paul, 1912.

Plant and Animal Improvement.

"Domesticated Animals and Plants," Davenport, Ginn & Co., Chicago, 1912.

Farm Crops.

Bowman, M. L. and Crossley, B. W.	Corn, St. Paul, Minn.; Webb Publishing Co., 1908
Burkett, C. W.	Farm Crops, New York: Orange Judd Co., 1910
Grub, Eugene and Guilford, W. D.	The Potato, Garden City, N. Y.: Doubleday Page Co., 1912
Hunt, T. F.	The Cereals in America, New York: Orange Judd Co., 1904
Hunt, T. F.	Forage and Fiber Crops in America, New York: Orange Judd Co., 1907
Livingston, George	Field Crop Production, New York: The Macmillan Co., 1914
Montgomery, E. G.	The Corn Crops, New York: Macmillan Co., 1913
Shaw, Thomas	Clovers and How to Grow Them, New York: Orange Judd Co., 1906
Shaw, Thomas	Grasses and How to Grow Them, St. Paul, Minn.: Webb Publishing Co., 1910
Weed, C. N. and Riley, W. E.	Crop Production, Boston: D. C. Heath & Co., 1914
Wing, J. E.	Alfalfa in America, Chicago: Sanders Publishing Co., 1912
Wing, J. E.	Meadows and Pastures, Chicago: Sanders Publishing Co., 1911
Wilson, A. D. and Warburton, C. W.	Field Crops, St. Paul: Webb Publishing Co., 1912
Piper	Forage Crops

Soils and Fertilizers.

Hall, A. D.	The Soil, New York: E. P. Dutton Co., 1909
Hall, A. D.	Fertilizers and Manures, New York: E. P. Dutton Co., 1908
Hopkins, C. G.	Soil Fertility and Permanent Agriculture, Boston: Ginn & Co., 1910
Thorne, C. E.	Farm Manures, New York: Orange Judd Co., 1913
Vorhees, E. B.	Fertilizers, New York: Macmillan Co., 1910

Irrigation and Drainage.

Elliot, C. G.	Practical Farm Drainage, New York: John Wiley & Sons, 1908
Elliot, C. G.	Engineering for Land Drainage, New York: John Wiley & Sons, 1912
Fortier, Samuel	Use of Water in Irrigation, New York: McGraw-Hill Book Co., 1915
King, F. H.	Irrigation and Drainage, New York: The Macmillan Co., 1907, 5 ed.
Olin, W. H.	American Irrigation Farming, New York: A. C. Mc-Clurg, 1914
Widtsoe, J. A.	Principles of Irrigation Practice, New York: The Mac-millan Co., 1914

Weeds.

Georgia, A. E.	Manual of Weeds, New York: The Macmillan Co., 1914
Pammel, L. H.	Weeds of the Farm and Garden, New York: Orange Judd Co., 1911
Pammel, L. H.	A Talk on Weeds, Ames, Iowa: Author, 1910
Shaw, Thomas	Weeds and How to Eradicate Them, St. Paul: Webb Publishing Co., 1911, rev.

Animal Husbandry—General

Harper, M. W.	Animal Husbandry for Schools, New York: Macmillan Co., 1913
Harper, M. W.	Manual of Farm Animal, New York: Macmillan Co., 1911
Hunt, T. F. and Burkett, C. W.	Farm Animals, New York: Orange Judd Co., 1914
Smith, H. R.	Profitable Stock Feeding, St. Paul, Minn.
Woll	Farm Animals, Philadelphia: Lippincott

Types, Breeds, and Judging Live Stock.

Craig, J. A.	Judging Live Stock, Des Moines, Iowa: Kenyon Printing & Mfg. Co., 1914, rev. ed.
Gay, C. W.	The Principles and Practices of Judging Live Stock, New York: The Macmillan Co., 1914
Plumb, C. S.	Types and Breeds of Farm Animals, Boston: Ginn & Co., 1914
Curtis, Robt. S.	Fundamentals of Live Stock Judging and Selection, Lea and Fubiger, Philadelphia and New York

Breeding Farm Animals.

Davenport, Eugene	Principles of Breeding, Boston: Ginn & Co., 1907
Davenport, Eugene	Domesticated Animals and Plants, Boston: Ginn & Co., 1912
Harper, M. W.	Breeding Farm Animals, New York: Orange Judd Co., 1914
Marshall, F. R.	Breeding Farm Animals, Chicago: Sanders Publishing Co., 1911
Wilson, James	Principles of Stock Breeding, Winton & Co.

Feeding Farm Animals.

Burkett, C. W.	First Principles of Feeding Farm Animals, New York: Orange Judd Co., 1912
Henry, W. A.	Feeds and Feeding, Madison, Wis.: Author, 1913, 13 ed.
Henry and Morrison	Feeds and Feeding, Madison, Wis.: Author, 1915, 15 ed.
Kellner, O. J.	The Scientific Feeding of Animals, New York: The Macmillan Co., 1911
Smith, H. R.	Profitable Stock Feeding, St. Paul, Minn.: Webb Publishing Co., 1910, 9 ed.
Sleeter, Bull	Principles of Feeding, Author.
Woll, F. W.	Productive Feeding of Animals, Philadelphia: J. B. Lippincott Co., 1915

Horses.

Barton, T. T.	Horses and Practical Horse Keeping, New York: The Macmillan Co., 1912
Gay, C. W.	Productive Horse Husbandry, Philadelphia: J. B. Lippincott Co., 1913
Harper, M. W.	The Training and Breaking of Horses, New York: The Macmillan Co., 1912
Harper, M. W.	Management and Breeding of Horses, New York: Orange Judd Co., 1913
Roberts, I. P.	The Horse, New York: The Macmillan Co., 1910, 3 ed.

Sheep.

Clarke, W. J.	Modern Sheep, Breeds and Management, Chicago: American Sheep Breeder Co., 1907
Craig, J. A. and Marshall, F. R.	Sheep Farming, New York: The Macmillan Co., 1913
Shaw, Thomas	Management and Feeding of Sheep, New York: Orange Judd Co., 1915
Steward, Henry	The Shepherd's Manual, New York: Orange Judd Co., 1884
Rushworth	Sheep and Their Diseases, Chicago: Alexander Eger Co.
Wing, J. E.	Sheep Farming in America, Chicago: Sanders Publishing Co., 1912
Youatt, Wm.	Sheep, Their Breeds, Management and Diseases, London: Simpkin, Marshall, Kent & Co., 1837, Historical
Coffey	Productive Sheep Husbandry, Lippincott Co.

Swine.

Day, G. E.	Productive Swine Husbandry, Philadelphia: J. B. Lippincott, 1915, 2 ed. rev.
Dawson, H. C.	The Hog Book, Chicago: Sanders Publishing Co., 1911 (purely practical)
Craig, R. A.	Diseases of Swine, New York: Orange Judd Co., 1906
Kingsley, A. T.	Diseases, Evanston, Illinois: American Journal of Veterinary Medicine, 1914
Gregory, C. V.	The Prairie Farmer Hog Book, Chicago: 1914

Dairying.

Woll, F. W.	Handbook for Farmer and Dairymen, New York: John Wiley & Sons
Michols, John	Dainry Farming
Michols, John	Market Dairying
Michols, John	Creamery Butter Making, Wauwatosa, Wis.: Author

Poultry.

Robinson	Principles and Practice of Poultry Culture, Chicago: Ginn & Co., 1912
Lee and Fabiger	Poultry Production, New York: W. A. Lippincott

Fruit Growing.

Green, S. B.	Popular Fruit Growing, Webb Co.
Boiley, L. H.	Principles of Fruit Growing, 1915, rev. ed.
Boiley, L. H.	The Pruning Book, Macmillan Co.

Vegetable Gardening.

Corbett, L. C.	Garden Farming, Boston: Ginn & Co., 1914 (very good in material, etc., but not logically arranged for teaching purposes)
Lloyd, J. W.	Productive Vegetable Gardening, Philadelphia, J. B. Lippincott, 1914 (Very good for high schools)
Troop, W. W.	Tomato Culture, New York: Orange Judd Co., 1911
Watts, R. L.	Vegetable Gardening, New York: Orange Judd Co., 1912

Floriculture and Amateur Gardening.

Ely, Helen R.	The Practical Flower Garden, New York: The Macmillan Co., 1911

Forestry.

Cheyney, E. G.	The Farm Woodlot, New York: The Macmillian Co., 1914
Levison, J. J.	Studies of Trees, New York: John Wiley & Sons Co., 1915
Pinchot, Gifford	The Training of a Forester, Philadelphia: J. B. Lippincott Co., 1914.

Plant Breeding.

Bailey, L. H.	Plant Breeding, New York: The Macmillan Co., 1915, new ed., rev.

Economic Entomology.

Folsom, J. W.	Entomology, Philadelphia: Blakiston, 2 ed., 1901
Herrick, B. W.	Insects Injurious to the Household and Annoying to Man, New York: The Macmillan Co., 1914
Sharpe, D.	Insects, New York: The Macmillan Co., 1901

Farm Management.

Boss, Andrew	Farm Management, Chicago: Lyons & Carnahan Co., 1914 (especially well adapted to high school work)
Boss, Andrew and Pes, F. W.	Farm Records and Accounts, St. Paul, Minn.: Webb Publishing Co., 1914
Warren, G. F.	Farm Management, New York: The Macmillan Co., 1913
Warren, G. F. and Livemoore, K. C.	Laboratory Exercises in Farm Management, New York: The Macmillan Co., 1913

Agricultural Engineering and Farm Mechanics.

French, Thos. E. and Ives, F. W.	Agricultural Drawing & Farm Structure, New York: McGraw Hill Book Co., 1915
Fuller, Myron L.	Domestic Water Supply for the Farm, New York: John Wiley & Sons, 1912
Hopkins, Alfred	Modern Farm Buildings, New York: McBride Nast & Co., 1914
Kinh, Alfred G.	Heating & Ventilation, New York: Norman W. Henley Publishing Co., 1913
Koester, Frank	Electricity for the Farm and Home, New York: Sturgis & Walton Co., 1913
Ogden, H. N. and Cleveland, H. N.	Practical Methods of Sewage Disposal, New York: John Wiley & Sons, 1913
Exblaw, K. J. T.	Farm Structures, New York: The Macmillan Co., 1914

Teaching Agriculture in the High School.

Bricker, G. A.	The Teaching of Agriculture in the High School, New York: The Macmillan Co., 1913
Davenport, Eugene	Education for Efficiency, Boston: D. C. Heath, 1915, rev.
Hummel, W. G. and B. R.	Materials and Methods in High School Agriculture, New York: The Macmillan Co., 1914

Biology Section

The meeting was called to order by the Chairman of the Section, Mr. G. J. Koons, at 9:00 a. m. in room 228 Natural History Building.

Registration and Announcements.

Business.

It was moved and carried that a committee prepare a list of reference books and illustrative material for physiology as was done for botany and zoology, and also a list of helpful biological bulletins.

Programme

Preliminary Report of Committee on Lists of Reference Books and Illustrative Material, Mr. John P. Gilbert, Chairman, State Normal School, Carbondale.

The committee recommended (1) that reference books on evolution, heredity, and kindred subjects be added to the list in botany and zoology previously recommended by the conference and adopted by the High School Visitor; (2) that a list of helpful biological bulletins also be added as well as a list of books and illustrative materials for physiology be prepared.

The Teaching of Botany, Zoology, and Physiology in the High Schools of the State

J. J. Didcoct, Assistant High School Visitor, University of Illinois

When Mr. Koons asked me to present this subject I hesitated for two reasons. First, I had some fear that anything I would say might be interpreted as a standard set up by the High School Visitor's office. Second, it was necessary for me to have the coöperation of the Science teachers, who in turn would have to consent to my criticisms of their work. After talking with several science teachers I decided to undertake to collect the necessary data to give you some idea of where in the course these subjects are taught and some idea of the content of the work. I sent return postal cards to the accredited schools (exclusive of the Chicago schools) asking for the following information:

Name of School ______________________

Subject	Number in class	Year 1, 2, 3, 4	Semester 1st. 2nd.	Periods per week	Text used	Name of Teacher
Biology						
Botany						
General Science						
Physiology						
Zoology						

If any subject is given for less than one semester please indicate it.

Remarks:

315 Cards were sent out and 226 of them were returned in time for this paper which will, of necessity, be largely statistical. The General Science data were collected for personal information; anyone wishing to see the results may do so at the close of this meeting. The following tables will give you the exact situation and I trust will furnish opportunity for discussion:

Biology

Year taught	Semester taught	Number of schools	Number of pupils taking course	Periods of work per week			Texts used		
				5	7		Hunter		
1st	1st	4	523	2	2		4		
1st	Both	1	67		1		1		
2nd	Both	2	42		2		2		
Totals		7	623	2	5		7		

PHYSIOLOGY

Year taught.	Semester taught.	Number of schools.	Number of pupils taking course.	Periods of work per week.				Texts used															
				5	6	7	8	Blaisdell	Ritchie	Davison	Walters	Peabody	Eddy	Hough and Sedgwick	Gulick	Conn and Budington	Fitz	Martin	Walker	Overton	Colton	Hutchinson	Schools not stating texts
1st.	1st.	39	1489	29	1	8	1	3	4	5	8	2	2	1	1	3	3	...	...	...	3	...	4
1st.	2nd.	65	1645	44	1	15	...	3	2	5	4	3	6	4	...	6	10	3	1	2	7	1	8
1st.	Both	6	266	4	...	2	...	..	1	...	1	1	...	...	...	1	1	...	...	...	...	...	1
2nd.	1st.	3	49	3	...	...	...	..	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...
2nd.	2nd.	23	263	11	1	9	1	1	...	...	4	...	6	...	...	4	3	...	1	2	...	...	2
2nd.	Both	1	30	1	...	...	...	..	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
1st. 2nd. }	1st.	1	30	1	...	...	...	..	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1st. 2nd. }	2nd.	3	43	3	...	...	...	..	...	...	...	...	...	...	...	...	2	...	...	...	...	...	1
1st. 3rd. }	2nd.	1	....	1	...	...	...	..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
2nd. 3rd. }	1st.	2	35	2	...	...	...	..	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...
2nd. 3rd. }	Both	1	27	1	...	...	...	..	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
3rd.	1st.	3	43	2	...	1	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
3rd.	2nd.	13	133	5	...	8	...	1	...	...	3	...	6	...	...	1	...	...	1	...	...	...	1
3rd. 4th. }	1st.	3	57	2	...	...	1	..	...	...	...	...	1	1	...	1	...	...	...	...	...	...	...
4th.	1st.	3	75	3	...	...	...	..	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...
Not stated		2	30	2	...	...	...	..	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Totals		169	4215	114	3	43	3	9	8	10	20	8	23	8	1	20	20	6	3	4	10	1	18

Seven schools did not give number taking the course.
Six schools did not state number of periods per week.

Botany

Year taught.	Semester taught.	Number of schools.	Number of pupils taking work.	Periods of work per week. 5	7	8	10	Texts used: Atkinson.	Andrews.	Bailey	Bergen	Bergen and Caldwell	Coulter	J. G. Coulter	J. M. Coulter	Caldwell	Davis and Caldwell	Number of school not stating texts.
1st.	1st.	2	50	....	1	1	....	....	....	....	....	....	2	....	....	....	....	....
1st.	2nd.	43	889	10	31	2	....	2	....	....	15	10	12	1	....	....	....	3
1st.	Both	4	130	....	3	1	....	....	....	....	2	....	2	....	....	....	....	....
2nd.	1st.	4	115	1	2	....	1	....	....	....	1	....	1	1	....	....	1	....
2nd.	2nd.	73	1498	14	52	4	1	3	2	2	13	28	12	2	2	1	....	8
2nd.	Both	16	335	1	14	1	....	3	....	....	2	7	3	....	....	....	....	1
3rd.	1st.	3	46	2	1	....	....	1	....	....	....	1	1	....	....	....	....	....
3rd.	2nd.	24	476	11	10	3	....	1	....	1	....	7	5	6	1	....	....	3
3rd.	Both	1	26	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....
4th.	2nd.	2	25	....	2	....	....	....	....	....	....	1	1	....	....	....	....	....
1st. 2nd.	1st.	1	31	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....
1st. 2nd.	2nd.	2	46	....	2	....	....	....	....	....	....	2	....	....	....	....	....	....
1st. 2nd. 3rd.	Both	1	22	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....
2nd. 3rd.	2nd.	4	123	....	4	....	....	1	....	....	....	1	1	....	....	....	....	1
2nd. 3rd.	Both	2	75	....	2	....	....	....	....	....	....	....	1	....	....	....	....	1
3rd. 4th.	2nd.	2	35	2	....	....	....	....	....	....	....	....	2	....	....	....	....	....
Not stated		7	109	1	6	....	....	....	....	....	1	3	3	....	....	....	....	....
Totals		191	4031	43	132	12	2	11	2	3	34	60	48	11	3	1	1	17

Twelve schools did not state number taking course.
Two schools did not state number of periods per week.

Zoology

Year taught.	Semester taught.	Number of schools.	Number of pupils taking course.	Periods of work per week.				Texts used										
				5	7	8	10	Colton	Herrick	Linville and Kelly	Kellog	Jordon, Kellog and Heath	Kellog and Doane	Davenport	Davison	Dougherty	Sharpe	Schools not stating texts
1st.	1st.	10	224	1	8	1	....	6	1	2	....	....	....	....	....	....	....	1
1st.	Both	2	37	....	2	....	....	....	....	2	....	....	....	....	....	....	....	....
2nd.	1st.	94	2145	17	66	5	....	21	7	37	2	9	4	2	3	1	1	7
2nd.	Both	10	214	1	6	1	1	2	....	5	1	1	....	....	....	....	....	1
3rd.	1st.	38	524	15	21	2	....	14	1	14	1	2	3	....	1	....	....	2
3rd.	2nd.	2	24	2	....	....	....	....	1	....	....	1	....	....	....	....	....	....
3rd.	Both	2	29	....	2	....	....	....	....	2	....	....	....	....	....	....	....	....
1st. 2nd.	1st.	2	46	1	....	....	....	....	....	1	....	....	....	1	....	....	....	....
1st. 2nd.	Both	1	46	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1
2nd. 3rd.	1st.	2	74	....	2	....	....	....	....	2	....	....	....	....	....	....	....	....
2nd. 3rd.	2nd.	1	19	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....
2nd. 3rd.	Both	1	62	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....
3rd. 4th.	Both	3	53	2	1	....	....	....	1	1	....	....	....	1	....	....	....	....
2nd. 3rd. 4th.	2nd.	2	......	....	2	....	....	....	....	1	....	....	....	....	....	....	1	....
4th.	1st.	2	25	....	2	....	....	1	....	1	....	....	....	....	....	....	....	....
Not stated		5	44	....	4	....	....	1	....	1	1	....	1	....	....	....	....	1
Totals		177	3566	40	118	9	1	45	11	71	5	13	8	4	4	1	2	13

Eighteen schools did not state number taking course.
Nine schools did not state periods per week.

In each of these tables some errors will be noted. It is evident that many schools reported five periods per week for some of the work when they are giving seven periods, the number required for credit. Some mistakes were made in naming text books as I am sure some of the books named do not exist.

There are eight schools which offer no work in the field of Biology. It is interesting to note where in the course each of these subjects is offered.

It is quite evident that the science work in high schools is taught by two distinct classes of teachers; those whom we may call scientific in their methods and are prepared to teach the work; and those who are merely "filling-in" as far as the science work is concerned. The latter are, as a rule, decidedly "bookish". Not long ago I heard a recitation in Zoology in which the teacher spent about ten minutes trying to get some one to tell the difference between the cost of lobsters twenty years ago and now. When no one guessed the exact relative cost the teacher opened a book and read a paragraph concerning this point. This is certainly giving the economic aspect its full due. However, it is not my purpose to spend much time on the actual teaching in the class room but rather to discuss the subject matter.

Perhaps the laboratory work will reveal as much as anything else the nature of the work covered. I fully realize that there are two types of note books, but it is my intention to present only the truly laboratory note book. I have collected some twenty-five note books from teachers of the state. These teachers have willingly loaned these books. In order to make the game fair I have asked these teachers (with the one exception where the teacher had gone to another school this year) to be here today and defend their note books. Some of them are here and I trust will take the opportunity to open the discussion.

These note books may be classified into the four following kinds:

(a). The note book which is largely descriptive, most of the work being copied from text books.

(b). The note book of the narrative style. This one is a poor sample of its kind. It contains three crude drawings, unlabeled save as to number one, two or three. There is no indication of the texts from which they were copied. The description does not fit the drawings as it is about, "A snake which one of our classmates brought to school this morning", and the drawings are of an earthworm, a water bug and a butterfly. This book was obtained only last week and represents the work of the class thus far this year.

(c). There is the note book which is nothing but drawings. These drawings may be very artistic in some cases, and in others can hardly be recognized as representing anything. The picture of the snake in one of these books is extremely artistic and was made by a girl who draws very well. I timed her on this particular drawing and found that it took her more than ten hours to complete it. The teacher told me she wanted pretty drawings but did not grade altogether on them. It was noticeable, however, that the most artistic had received the highest marks. The young lady who owns this book said to me the other day, "I'd like to know how much time I spent last year on Zoology and Botany; I don't know much about them only that I had to copy lots of drawings". Of course this type of note book is never prepared in the laboratory.

(d). Another poor note book is the kind which is a mixture of the notes of many subjects. The one I present contains Physiography, History, English and Zoology. This certainly does not develop the scientific attitude. I believe that proper English might well be insisted upon but am quite sure that very little will "carry over" by associating the work in a note book. Time will not permit me to discuss more of the note books. It will pay you to look them over after this meeting.

You will notice one striking similarity in the Zoology note books. They all contain either drawings or descriptions of the locust, the butterfly and the cicada. Beyond that there is very little uniformity. There is no doubt in my mind but that some teachers over-emphasize the economic side of the work as some of them do not get through with the insects until about Christmas time. I thoroughly believe that this phase of the work should be given much attention but am convinced that there is no need of counting the segments of the legs of all the insects merely because they may be found in the home community. Many of these specimens are used in just that way with little reference to the real economic value of the organism. Much of this is due to the inability or unwillingness of the school authorities to provide material for regular laboratory work. I often suggest to a teacher that he ask his class to donate ten to twenty-five cents each for this purpose. Good material for laboratory work is absolutely necessary for good work in the laboratory.

I want to close by saying that better work could be done in all of these subjects, if,

time were not unduly wasted on note books;
undue emphasis were not put on the early part of the work;
more and better laboratory material could be had;
there were some uniformity in the work.

I suggest that this section appoint a committee to consider the following questions:

Should these subjects be taught one half or a whole year?
In what year should each be taught?
What line of work (in general) should be covered in each subject?
What emphasis should be given to the economic side?
Is it better in Zoology to start with the protozoa or the insects?

(Note. I have purposely refused to state what I consider a good note book. Such a note book should be determined by the teachers of Biology represented in this section.)

The Place of the Library in Teaching Biological Sciences

Supt. Faith McAuley, St. Charles

Since scientific knowledge and training in the scientific method is the aim of science teaching, the sciences of all subjects should not make the mistake of studying about the thing rather than studying the thing itself. In other words, as science teachers, our interest lies in the scientific materials themselves and in the scientific method of approach to them. These methods and materials we aim to emphasize, to keep in the foreground, and to these the library is an important and necessary supplement but still a supplement only.

We would not for a moment minimize the value of the science library. We are, however, suggesting that the failure to use the science library is hardly to be regarded as the chief sin of the rank and file of science teachers. We commend the keen anxiety lest the science library may not be used. May a still keener anxiety stand guard lest the first-hand materials of science be neglected. We should regard that library as efficiently used, which serves to round out and complete the first-hand, fundamental experiences furnished by the work of the laboratory.

Marshall's *Mushroom Book* and Farlow's *Some Edible and Poisonous Fungi* have a place but not the chief place in the study of mushrooms. They should, of course, be in the school library and be freely used, but their study should come in response to interest created by contact with the material in field and laboratory. The most careful reading of Dr. Cowle's description of the sand dunes of Lake Michigan is a poor substitute for a trip to the dune region itself. *The Plant Societies of the Chicago region* by the same author is a splendid supplementary text for field trips anywhere, but not a substitute for them.

This tendency to give the library first place is seen, too, in the elementary school. Such excellent texts as Holtz' Nature Study and Coulter and Patterson's Practical Nature Study too often "short circuit" the nature study work and supersede all first hand outdoor experiences.

The place of the library in biology teaching is supplementary, and the role that it plays in this way is extremely important. The zoology teacher attempting to make effective information concerning the army worm, the apple maggot, or the clothes moth would be handicapped indeed without such texts as Sanderson's *Insect Pests of Farm and Garden,* Folsom's *Entomology and its Biological and Economic Aspects,* and Kellogg and Doane's *Economic Zoology and Entomology.* A youngster who digs up in his spring gardening several little brown jugs may find useful Eliot and Soule's *Caterpillars and their Moths,* but we must not fail to recognize that the unearthing of the little jugs is the large element in the educative process. In botany, too, any serious work with the outdoors makes the use of books necessary.

To say that the library is supplementary in function in biology teaching, is in no way to minimize its importance. The supplementing and rounding out of the laboratory experience is most important and demands adequate library facilities. The science section of the library needs to contain, as does no other section, the latest and best books in each field. Assignments and references need to be definite, thus saving much time. An intelligent introduction as to the view point of the book to which the reference is made is also illuminating. The discussion of nitrogen in Goff and Mayne's *First Principles of Agriculture* differs materially from that in *Peter's Modern Chemistry.* This means that the teacher must know intimately his reference material, which is no small task, but the library is not merely a convenience for the unambitious teacher, nor is the outside reference a device for using otherwise superfluous time.

In our use of the library, then, let us insist on maintaining the scientific method. Let us deal first with our materials and then draw on the library to

its limit for supplementary material to round out and complete the first hand knowledge gained in the field and laboratory. The basis for the intelligent, effective use of the reference books of the library must, however, be the first hand contact with the object of research.

Illustrated Talk: The Use of the Camera in Animal Study

T. L. Hankinson, State Normal School, Charleston

While the camera is not a necessary instrument to every zoology teacher, there are some phases of his work that can be greatly improved with it. Where the local fauna is used as a basis for teaching, photographs are very useful to supplement field notes taken by teachers and pupils. Many facts concerning physiographic, hydrographic, and vegetal features can best be recorded in this way. Frequently the work of animals, or the animals themselves in a habitat make good pictures useful in ecological and other studies. Temporary conditions produced by storms, floods, droughts, and the like are well shown by photographs.

A growing collection of such habitat pictures becomes more and more useful in the teaching work of a school, and it may be of much scientific value by permanently preserving data that is rapidly disappearing due chiefly to agricultural operations. How interesting and valuable would good pictures now be of the original Illinois prairies and forests! I value very much the many negatives I have showing wooded ravines now denuded, ponds now drained, and thickets and woods now corn fields.

Another use of photographs is to supplement the zoological collection by showing animals not readily preserved, such as many microscopic forms and animals found dead in good appearance but not in good enough condition for permanent preservation and by showing animals that are property of sportsmen or fishermen, who frequently prize their quarry to such an extent that no inducement that the naturalist photographer is likely to offer will bring him to part with it; and all arguments showing the much greater value of the specimen permanently preserved for scientific purposes over its use to furnish a few minutes of gastronomic pleasure, are meaningless to him. But such specimens can usually be photographed with much assistance from the owner who is eager for some prints from the negative.

Like other objects in the school zoological collection, full data should accompany each picture. This should be composed of date, name of photographer, exact locality, and size of some object shown that may be used as a scale in judging the size of other objects in the picture. The negative should also be labeled. This can be done with India ink on the clear border if an autographic camera is not being used. In some cases, a light print with the names written over the plants and other important features shown in it should be filed with the negative.

The value of the photograph collection for teaching purposes is obvious. In many instances pupils will be as eager to obtain pictures as they are other biological objects. Their little kodaks and brownies may be put to an unusually good use here. Photographs make in some cases good laboratory material, but their value is usually greatest when used in a lantern. A series of slides

often accomplishes objects similar to those of a long trip. Precautions, of course, should be taken against the pictures eliminating field work. Only when field work is impossible should the lantern exercise be substituted for it. Much can be done with the lantern to acquaint pupils with important animals. Here the camera is useful to copy book illustrations of these animals, which are more valuable for bringing out characteristics than most pictures taken in nature.

The subject of photographic equipment will be considered very little in this paper, chiefly because it is a large subject, on account of the diversity of the teacher's needs. There seems to be but one general rule for selecting quipment, and that is, first, decide for what purpose the camera is most needed and then study catalogues and other photographic publications and consult dealers and others familiar with the subject. Finally purchase, according to your means, one of the great number of outfits on the market.

Five cameras are used in my teaching work; one taking 6½x8½ inch pictures and with a long bellows, a photomicrographic camera, a pocket camera with long bellows, taking 3¼x4¼ inch plates, a cartridge kodak, and an old style reflex camera. The last two take 4x5 inch pictures. The large camera is used to some extent in the field but chiefly in the laboratory to photograph small animals and to copy book illustrations. The pocket camera is principally for long trips where bulk and weight are important factors.

The reflex camera and the kodak with a set of plate holders that can be used in either, constitutes my most useful field outfit. With this, almost any desired work can be done. The kodak is used for time exposures and the reflex for snap shots. Supplemental lenses permit taking pictures of very distant objects as well as those less than two feet away from the camera. The reflex is the most useful of all my cameras, and is the best instrument for nature work I have tried. It is especially superior from the standpoint of easy and rapid manipulation and the wide range of conditions under which snap shots can be made with it. For photographing active wild animals, it has its superior, if this exists, only among other reflecting cameras.

Since the merits of reflecting cameras do not seem to be well known to zoology teachers, I have decided to show on the screen only photographs that illustrate their use in zoology work. All of the pictures that will be shown, except the very first one, were taken with my reflex camera, and they are snap shots, none with more than a fifth of a second exposure.

The slides shown illustrate the following:—

1. Different types of animal habitats found chiefly in the region about Charleston, Illinois, including a number of interesting regions such as woodlands and prairie ponds that are now destroyed.
2. Living animals and their work, most of which are photographed undisturbed in nature. Insects, spiders and their webs, fish in aquaria, fish nests, amphibians, reptiles, birds and their nests, and mammals were the chief subjects illustrated.
3. Class activities. Illustrated by a few slides showing garden work and some other outdoor class exercises.

Signed, T. L. Hankinson,
Eastern Illinois State Normal School, Charleston, Illinois.

Problems in Teaching the Biological Sciences was the next topic, and was discussed by Dr. W. C. Bagley, University of Illinois.

The Teaching of Physiology in the High School

Mr. Louis Rettger, State Normal School, Terre Haute, Indiana

There are two entirely distinct angles from which the subject assigned to me may be discussed. One of these I may call the external aspect and the other the internal aspect.

Now the external aspect concerns the place of physiology in the high school curriculum, the amount of time to be devoted to it, the question of laboratory equipment and such other administrative problems as have to do with the actual operations of the school.

The second aspect of the question deals with the internal consideration of the subject and would try to determine what portion of the field of physiology would be most suitable for high school instruction, the varied emphasis to be placed upon the different portions of the subject, the methods of teaching the same, and all other problems which come to the teacher as he stands before his class.

It is my desire to deal more largely this afternoon with the internal consideration of the subject, but before turning to this I may state very briefly a few of the ideas that have to do with the purely administrative side of the school curriculum.

1. The writer views with approval the sound educational sense that has put back into the high school as one of the regular subjects of instruction the physiology and hygiene of the human body. That it should have been denied a place in the high school for some time is natural enough. It was pointed out that the subject had been studied for a year or two in the grades. It was one of the regular common school subjects. When therefore the high school was added it seemed the thing to do to add the other sciences not represented in the common school curriculum. Physiology was therefore set aside and botany, zoology, physics, chemistry and sometimes other sciences were introduced as the "advanced" subjects. This course has had much to commend it but the feeling is gradually arising that this arrangement is not altogether satisfactory. On account of the immaturity of the upper grade pupil the discussion of any subject remains most elementary. It was found that the pupil entering high school, in spite of his work in physiology in the grades, still had a very fragmentary and superficial knowledge, too ineffective at times to have lasting and pragmatic results in the actual problems of health. To drop this important field altogether and to turn to things of more distant interest in biology is certainly not altogether wise. The most interesting animal to the young person is himself, and to lose this fine avenue of approach to a study of the deeper biological problems is to deprive the young student of one of the best chances of instruction. In these practical days too, there is no field that yields such important returns from the student's standpoint and serves such personal ends as the consideration of the great laws that govern the proper functioning of the body in health and its return to normal function-

ing after disease. No wonder there is a pressure from teachers and public to rehabilitate in the high school a subject of such interest. It certainly will not be long until the subject of physiology will in our better high schools take its place among other sciences as the one coming closest to the real vital problems of the student. It would seem therefore that there would be no question as to the wisdom of giving a place to physiology in every high school curriculum. The problem has indeed shifted to a newer question and that is at what place in the high school course this subject could be placed to greatest advantage.

Should it be early in the course and precede the other sciences, or later in the course and follow them? Here is a field of contention on which unanimity is still far distant. Not long ago the writer listened to a discussion before a body of school teachers in his own state only to discover a wide difference of opinion.

Speaking for myself, however, I feel that I am backed up by the logic of the situation in maintaining that the subject of physiology ought to be taught late in the course. Physiology is a derived science, which goes to physics and chemistry and biology for practically all the laws by which to explain the bodily functions. This does not mean that there cannot be within the body certain activities for which physical and chemical laws are now inadequate as explanations, but it does mean that to the enquiring and investigating physiologist, be he scholar and expert, or young beginning student, the only methods at his disposal so far in the study of the body, are the identical methods of the physical and chemical laboratories. There are at present no experiments with vital energies and entelechies. All these vitalistic conceptions lie in the field of pure speculative philosophy. In the physiological laboratory and class room chemical and physical laws are still the only courts of appeal. It would seem therefore logical and correct that the student about to enter into a discussion of this subject should first have had some introduction into the field of knowledge in whose terms he is expected to understand and appreciate the new. And what is true of physics and chemistry is to a large extent true of botany and zoology. In this biological field are found usually in simpler form, the problems which in the human body are often complicated and involved. Therefore it would seem a fact of logical scientific sequence to place physiology in the later years of the course.

What then are the reasons advanced for pushing this subject forward into the earlier years? In the first place it has been argued that laboratory facilities are more easily provided for the Freshmen class in physiology than for the larger classes in botany or chemistry. This reason unfortunately is based on the too common mistake that laboratory work in physiology is less an integral part of the work than the laboratory work in most other sciences. Physiology has been almost the last one of the old sciences to lift itself out of the meshes of bookish discussion. There are still scores of high schools where microscopes, herbaria, and field excursions figure in botany courses, but where the courses in physiology remain throughout almost wholly bookish recitations. It would seem therefore that if physiology could only be placed upon the same experimental basis upon which the other sciences are being

placed the handicap from laboratory equipment would apply to all alike. In the school I have the honor to represent the material and equipment of the physiological laboratory are as large as that of any of the others, and in spite of that, still entirely inadequate to meet the educational demands made upon it.

Having thus briefly indicated my own views on this topic I wish to be frank enough to admit that this controversial point is however a minor matter. Certain it is that if physiology preceded botany and zoology, these latter subjects will have the advantage of preliminary training no less than physiology when it follows instead of precedes.

The pupil interested is therefore the gainer, no matter which subject he takes last. Then too, it is worth remembering that the various sciences are after all not separate entities, each with its own training and methods and educational value. They are all parts of the same great field of truth and their division into these various sciences is largely arbitrary, necessitated by the narrow limits of the human mind. These various fields are only pigeon holes in the same great chest of truth and their assortment is a matter of convenience and not inherent difference. Then too, the very point of instruction in any science is not so much the learning of this or that individual fact, it is rather the development of a state of mind and training in scientific method, just as in the field of reading I take it, it is not so much the study of this selection or the mastery of that classic as it is to have the pupil get some real idea of what is meant by literary appreciation. Real science instruction, after all is said, is not so much to teach the student to know this individual plant or that particular animal, but we strive to give him a critical observation instead of a superficial oversight. We want him to learn to sense a fact and recognize a sham. We wish to train him in the weighing of evidence and in the stripping away of all settings from every proposition that do not have causal connection with the main point; fact from fancy, evidence from mere hearsay, and scientific opinion from mere surmise. These are the distinctions that he will need after his botanical interests have vanished, his zoological terminology disappeared and his biological high school note book is lost. If some honest teacher, trained in botany better than other fields, can teach this method of truth-finding better with plants than in any other way, by all means let him teach botany and do not force him to inferior work in other fields. The real problem is after all not so much in which year of the high school this or that subject shall be taught as that in the high school throughout every year and in every science he shall be taught the thing of highest importance, the method of investigation.

Now in the writer's opinion this method of science is as valuable in physiology as in botany and zoology, provided the teacher is as much interested in physiological matters as in plants and animals. As all these sciences share in common this method of inquiry it would seem as if the factor of logic inherent in the subject-matter should determine the sequence in the school. Certainly this inherent sequence would put the fundamental sciences first and with these to draw upon, turn to the most interesting biological problem of all—the human body.

With this brief discussion of what might be called the administrative side of the subject, permit me to turn to the scientific side of the subject. Surely at last analysis the problem as to the value of physiology in the high school will be determined not so much by its position in the course as by the live educational content of the subject itself, be it freshmen or senior in the connotation.

Before we fully decide where to place the subject in the course let us leave nothing undone to make sure that we have something educationally really worth while to place there at all.

What then is the content of the knowledge that physiology offers? In a strictly scientific sense the field of physiology is fairly well determined. In college and university courses in spite of certain difference the ground to be covered is a tolerably definite one. Advanced text books in higher institutions and medical schools show a remarkable uniformity in the subject-matter included. By this is not meant that physiology is confined within definite and wholly settled boundaries. The physiologist, not unlike workers in other fields must reach into the related subjects at every turn and the boundaries of his special field are often lost on the general map of scientific truths.

But the term is entirely different when used to designate a subject of study or a course in the curriculum of the average high school. Here the term becomes so vague, is so wide in its application that it is not far wrong to say that there is not among teachers of secondary schools any generally accepted concensus of opinion just what physiology ought to include. The college man fresh from the department of anatomy and morphology will probably wish to supplement the bare anatomical study of human anatomy with brief and simple illustrations from the field of comparative animal morphology. If he is familiar with microscopic technique, he may attempt to go into the minute histological structure of the tissues, and he may study physiology largely through the microscope.

Other teachers impressed with the growing emphasis on matters of health will include the elemental facts of bacteriology. The microscope will give way to the plates for growing bacterial colonies, and strictly physiological discussions will be replaced by subject-matter from the field of practical medicine, dealing with causes and methods of prevention of the commoner diseases.

To still another teacher impressed with the vocational emphasis in education the economic problems of the subject will appeal most strongly and physiology becomes the hand-maiden to courses of domestic science and agriculture. Already nutritional physiologies are appearing in all the book markets in increasing numbers.

Finally there are those specially interested in sociology who desire that this subject shall not fail to show that the newer education and the newer sociology rest in no small part on biological foundations. Physical development and heredity figure at present in all discussions of human behavior. The treatment of criminals and delinquents has changed with the growing notion that flesh and blood have something to do with their acts. In education the normal and the sub-normal are no longer so generally forced through the

same molds. Pedagogy and sociology are more and more realizing the importance of physiological antecedents that determine human character. Mental and moral qualities of a negative type are therefore being studied more and more as forms of disease, and the correcting of their defects is not infrequently accomplished through physiological methods.

Whatever the shortcomings of these plans, the claims of physiology as stated by them have at least this in their favor. They are positive programs advanced by teachers and writers having a dynamic interest in the subject. But unfortunately there remains a class of teachers which has no objective point to reach in this instruction in physiology. These teachers follow the prescribed outline or text-book with servile conformity. The recitations although apparently in good English are nevertheless educationally in a foreign jargon of scientific terms and alien ideas. Sanitation is discussed in an unsanitary school building without discovering the inconsistency, and the bookish discussions of fresh air go on in an ill-ventilated class room. The truths presented have no pragmatic consequence. They do not affect conduct in thought or action. When the course is over they have preached no gospel, launched no new campaign, given no new vision of things that ought to be in matters of physical well-being, either individual or for the race.

The many and divergent claims pressed upon the teacher of physiology and hygiene by experts in this field can obviously not all be met. The program is too big. Neither the time allotted nor the training of the teacher nor the maturity of the pupils, will permit such a varied emphasis. It is necessary that these matters be carefully sifted in order that we may know what is reasonable and proper to put into the courses of the secondary schools, assuming that the great majority of the pupils will get no formal instruction in this field after leaving this school.

In the selection of the proper content the following principles are to the writer of fundamental significance. 1. The course in the high school ought to reflect what is going on in the firing line of inquiry as well as to give to the pupil what is traditional in the subject. Of course it is not a matter of oldness or newness that determines the value of a fact. It is of importance only that the fact be true and worth while, and yet there is a quality to newer ideas that gives them carrying power. A field of study now under investigation, engaging the interests of many minds has a vitality, other things being equal, that is not so easily imparted to older settled facts from which current interest has more or less shifted. The firing line in any subject is the most inspiring part of the subject to teach and no doubt to learn. The very fact that knowledge is not yet complete, that gaps still appear, that explanations are not always forthcoming, these produce the very atmosphere of the healthy inquiring mind. There is no formal rubbish, dried and cut into educational bundles, that can for a moment be compared with the stirring questions now at the front. This is the sport of hunting live game. It is the interest in to-day's news rather than in yesterday's paper. This is also the heart of the scientific attitude of mind. The purpose of instruction in physiology and hygiene is no less than in other sciences to awaken an intelligent interest in these problems strong enough to carry their study beyond the period of formal instruction and vital

enough to command the will to translate this knowledge into appropriate conduct. In few subjects is this freshness of knowledge so accessible as in the field of physiology. The great amount of research is bringing new facts to light almost daily, and the public interest in matters of health and disease makes these discoveries current information. Problems of sanitation are being worked out concretely by many cities, and movements for safeguarding the public health may be studied at first hand in every community. A vast amount of literature is now being sent out by various organizations to educate the public in these matters. The Health Departments of the various states have become more and more aggressive in this campaign for better things, and the teacher who will seize the opportunity of keeping in touch with these various agencies all at work in this line, can command an amount of dynamic educational energy that will save his course from slavish bookishness and empty results.

The point here then is that the live teacher must remake and re-shape his course out of fresh and new material just at hand. Physiology and hygiene are not and probably never will be wholly conventionalized subjects with a settled traditional content.

What to teach and how to teach in this field must therefore remain a problem with each instructor that he must in large part solve for himself. Too many factors enter into effective teaching to make it possible to anticipate all in any general plan. The teacher's own interests soon outweigh other matters and facts and ideas that express convictions of the instructor will soon displace the merely academic opinions which are only a part of his physiological baggae. In education as in warfare, the telling impact of a missile depends not only upon the quality of the metal hurled, but also upon the carrying momentum imparted to it. There is therefore much danger in singling out a series of facts as *the* facts to teach. There is no surer way of taking the life of a subject than by strangling it in this manner. No small part of the delight of the teacher of science comes from the appreciation that nature is infinite at every point, that there are no boundaries to his subject, save those imposed upon it by his own lack of knowledge, but that even with his limited vision he may look at facts from all angles, and marshal them into innumerable new forms. The sciences in the past have suffered from overstandardization. There have been too many ready-formed outlines, which have tended to rob the teacher of his initiative and the subject of its freshness. A science is entirely too large to make any pupil in the primary or secondary school fully appreciate its logical coherence. That is for the scholar in the subject. The undergraduate must approach the new study with the attitude of the explorer and discoverer. He will be helped most, not by having the answers to the formal questions imposed arbitrarily upon him, but by charting his unknown seas himself from the facts before him, no matter how often the map must be revised. He may have little interest in the prescribed syllabus, but he will be quite willing to be an incipient sanitary engineer. To make a sanitary survey, even in a child's way of a part of his neighborhood seems to him to be a real man's work. To report upon some disease ravaging his own community, is real investigation to him. To handle disinfectants in times

of necessity and perhaps to learn experimentally how to make the proper solutions under varying conditions; this is research to him. It is at the same time the most practical kind of instruction. To have a few sterile plates put into his hands, to measure even in his simple way the infectious nature of the dust we breathe, is not only to inform him, but it is to capture his will to use this information for valuable ends.

This work of first hand discovery need not be limited to sanitary matters. The more strictly physiological truths may be handled in the same manner. Instead of memorizing the names of bones and tissues, a dull procedure at best, let the teacher invite a little comparative study of the bony frames of the higher animals around him. Nor need this comparative study deal with the boiled skeleton. It might more profitably perhaps address itself to those obvious facts of structure readily seen in the live animal. The fore foot as compared with the hind foot of the dog may be the starting point for the examination of the limbs of the ox, sheep and horse, to find the homologous parts of knee, ankle and toe. To find the arm and hand in the familiar bird's wing and see the rudimentary fingers still present, will perhaps open a new world of relationships that may later give him a changed and truer view of all organic life.

The physiology of respiration and the problem of the "stuffy" room lend themselves well to first hand study. In the matter of foods and their digestion there is at the disposal of the informed teacher a series of experiments so simple in their manipulation and so free from technical and chemical terminology that they are entirely in place in the elementary school. The digestive ferments may be bought for a nominal price at any drug store, and the process of digestion from starches to the final sugars and from protein to end blocks may be viewed step by step and demonstrated by the simplest confirmatory tests. A frog with the brain pithed will explain more about reflex action and the relationship of cords and higher centers than innumerable drawings without such concrete verification. The pupil whose time is taken to study brain or eye has the right to study them in the only way that ever yields educational returns. That is, he has a right to study them as real things and not as shadowy symbols in words.

2. The second principle therefore in the teaching of physiology is that the subject-matter should not only be in part at least fresh from the firing line of investigation, but that as much of it as possible should fall into the experimental field of demonstration. In this emphasis of the value of the experimental method it may be well to know clearly that the heart of the experiment is by no means merely the handling of things. A very elaborate experiment may be as valueless as the bookish discussion of its terminology. It may be covered up with directions so that it enslaves as much as any arbitrary outline to be memorized. The heart of an experiment is the mental attitude which it calls out. If this is one of discovery and exploration motivated by a genuine interest to know the truth in the case, it is an experiment of a high educational order, no matter how simple the apparatus or how elementary the mechanical execution. A gilt frame does not make a picture a work of art, nor do glassware and costly apparatus make a scientific laboratory. As

the high schools are now organized and furnished it would be asking of the teacher the impossible to give the instruction in physiology and hygiene under the conditions of a well-equipped college laboratory. Concrete work must fit into the complex program of the day with its many demands upon the teacher's time and strength, and the experiments must be such that they are readily at his finger's ends.

Fortunately the fundamental things in science are as a rule the very ones that react under simplest conditions. Then too, it is by no means necessary that this concrete work should be a daily exercise. A telling experiment needs discussion and amplification. At this point the text or supplementary reference may be used to enrich the observation or verify the results. When all is done, a careful writing in good English of the entire procedure and its conclusions is most valuable, not only for the science concerned, but as a training in language expression. It will always remain true that the first requisite in using good English as well as in teaching it, is to have something worth while to say.

Finally there are the classic experiments which have paved the way to discoveries. These of course cannot be duplicated in the high school, but they may be studied historically to great advantage. To show how the truths of a science became known and to follow some of the epoch-making chapters., is in a way to participate in the original investigation. Here the teacher of physiology and hygiene will find rich material. The life and work of Pasteur show in almost dramatic form the devious paths of investigation that led him to the discovery of the modern germ theory of disease. The problem of yellow fever and the relation of the mosquito to it, receive a new interest. The story of Read, Lazear and Agrimonte and in a similar way the researches of Ross and his colleagues in the cause of malaria will certainly enlist the pupil's interest in man's struggle to conquer disease.

We must of course remember that the advanced methods of instruction in colleges and universities through their Journal Clubs and Seminaries may not be imposed upon the immature pupil of the grades or even the high school. Our lower schools have not infrequently suffered because some teacher, fresh from the higher institutions, has attempted to transplant the curriculum of the university and to graft the methods of the college upon the lower school. Such educational mistakes cannot maintain themselves long. But it is equally wrong to go to the other extreme and deny to the high school any participation in those methods which give to higher instruction its freshness and its vitality. The teacher of the high school may with the greatest profits to his class, report to his pupils the results of current investigation and keep them informed, strictly within the limits of their immature powers of comprehension, of the status of some of the important problems now so vigorously attacked for their solution. To keep in touch with the world's work is for the younger pupil as truly educational research as for the maturer college student, provided only that his touch be in terms that he can understand.

There has thus been stated briefly, merely by way of illustration, what a wealth of subject-matter the teacher of physiology and hygiene may com-

mand if he will, above the narrow and formal limits of his conventional text-book. If it be argued that such excursions out of the beaten path will make it impossible to cover the traditional track, then let a new evaluation be made to determine the desirability of following that path. There may be much that would better be passed by altogether. May we as teachers not sometime discover what a heavy load of useless information we ask the pupil to carry in his march through the schools? Luckily much of it will not stick to his shoulders, but will drop off because it is not fastened to anything. It has been merely piled on. Herein lies many a helpless child's protection against an overburdened course. As in the matter of foods, so in the matter of knowledge, it is not what we swallow, nor yet what we digest, it is only that which we assimilate that builds tissue. It is not the truths we hear, nor those we remember merely, nay, nor those which we partly understand, it is those which have been heard, remembered, understood and mentally assimilated and vitalized into conduct and action that count in the long run.

Permit me now to turn to the third great principle in the teaching of physiology. The subject-matter should not only be of current interest at least in part, it should not only rest largely upon experimental methods, it should be motivated by high practical ideals to promote the health, both individual and public. This suggests a brief word about the idea or ideas that should motivate the instruction in this field. There is no doubt that when physiology and hygiene were added to the school curriculum it was for the very definite purpose of safe-guarding human life. Its aim was clear and unequivocal. The value of health as an asset needed no argument. Health is at the very bottom of practically every human good. It is the great asset no less of an individual than of a people. It is the index of a thousand other virtues that follow in its train. Like all perfectly obvious truths, this regard for the value of health and physical efficiency was always acknowledged, but it has only in recent years received the careful and critical attention that promises more concrete efforts for better things in this matter. Anything therefore that is calculated to correct physical living is proper subject-matter for this branch of instruction, provided only that it is fitted to the pupil's power to comprehend intelligently. But such subject-matter should not consist in the main of empirical rules to be followed unquestioningly. There is in all human nature a tendency to resist an arbitrary rule, but we all bow obediently to the consequences of facts once clearly discerned. To understand even in part just what physicians and sanitarians are attempting to do and what the methods are which they employ, is far more practical in the long run, than giving their formal conclusions only. It were well if physicians could more frequently instruct their patients, and already there are signs that the medical man of the future will not be so exclusively confined in his practice to the "curing" of this or that disease, but will be the community leader in a campaign of education for a better public health as well as an aid in time of trouble. In the meantime the teacher is the most available agent to prepare the way, even for the scientific physician himself. The patient who is advised to take the serum treatment for typhoid fever has a right to know what the point to his procedure is, and upon what scientific grounds it rests. Not only

the patient, but the community too should understand the physiological reason for such a course of treatment. In the case of hydrophobia there are innumerable superstitions, some of them actually dangerous, current in almost every neighborhood. Some of these superstitions are so formidable as to interfere with methods of relief. The Pasteur treatment is probably a complete mystery to the patient. He follows it half hopeful, half skeptical. Has not the pupil in school a right to have this explained to him, especially since it can be explained in the simplest of terms? The fundamental conceptions about acquired immunity are not too involved for the upper grades. They are in bold outline little more than the observation already familiar to him in a number of diseases, that one attack of a disease tends to make the person more or less immune to a second. It is not necessary to go into the minute and confusing details about the many kinds of anti-bodies. There is no necessity to talk about "side-chains" and "receptors" and "complements." The teacher who knows the child's mind will not make this mistake. But the general conception of anti-bodies is no more difficult than the matter of pancreatic secretions. The boy or girl on whose farm the cattle have been officially inspected and tested for tuberculosis, should be told by his teacher of the physiology and hygiene, what it all means without entering upon the technical theories about it. How the school physician tests the throat for diphtheria, and how a positive test looks when incubated, are problems easily comprehended. When they learn that health officials may take a few droplets of blood and determine if the patient have typhoid fever, it must surely awaken in their mind a genuine curiosity how such a thing can be done. They know that it is done, for the local physician has perhaps made such tests, but the procedure is entirely meaningless. And yet the test may be explained in a few minutes to any mature pupil, so that he will not only see its scientific reason, but appreciate in a new way, what cure and recovery really mean. The student should know what the antitoxin is, how in a general way it was produced and what the injection of it is meant to do. If the community of the future is to be saved from the follies of quack remedies and advertised "cures", it will be because they have learned what medicines can do, and what they cannot do. The modern treatments for disease with vaccines or sera, or bacterins may be far from satisfactory and leave much to be desired, but a simple popular understanding of them, will forever make impossible that blind reasoning that inasmuch as they do not know what causes a disease there is no telling what may cure it. Thus the absurdest vagaries receive a sympathetic hearing. Our popular vice in the indiscriminate use of "sure cures" flourishes in large part, because the scientific explanations of our achievements in preventive and curative medicine have been generally withheld from the public. Where such wonders are wrought the uninformed man believes anything may be possible.

The inexorable law of cause and effect in the field of disease may be frequently obscured in the individual case, but it may be shown in the composite picture of the vital statistics of a community or state. Such vital statistics if accurately made and correctly interpreted, and then compared from time to time, give a moving picture of the greatest significance. They show in what directions things are moving, and which forces are gaining. Such

vital statistics may be a social chess-board on which the movements of cause and effect may be followed. It is a handicap to health officers that the public so generally is unable to see in these statistics little more than the red tape of prescribed reports. To enable the maturer pupils to read beneath and between the numbers of such reports, and to sense the drift of society in the important matters shown by these official records, is to perform a service well worth a place in the health instruction of any school.

In the foregoing it has been the aim to indicate to the teacher how rich and varied the field from which he may draw his material. If it seems that these suggestions assume too much scholarship or training on the part of the teacher, it still remains that to the growing instructor, these suggestions may at least stimulate him toward further study on his own part. There are few things in education that so vitally affect for good, the work of a school, as an aggressive and growing scholarship possessed by the teacher. For him who is inadequately trained, and who is indifferent about it, there is no help. It is however believed that the examples here given are indicative of a class with which many, perhaps most teachers, are not entirely familiar. However, it remains true, that these suggestions how physiology and hygiene may perhaps be taught more effectively, are offered not because they make the ascent easier for the instructor, but because it is hoped they will lead to look-out points where the view is clearer and more commanding.

There has recently come under increased discussion another phase of hygiene not yet referred to here. This is instruction in so-called sex-hygiene. Of the necessity of safe-guarding the young against evil influences, only too apparent almost everywhere, there can be no question. Just how this may best be accomplished is the only thing in controversy. The public and formal teaching of sex-hygiene is unfortunately still an uncharted sea. Before we are fully informed about it, it will have to be tried out by wise and capable experimenters, under conditions that will test its weaknesses and its strength. In the meantime, the instructor genuinely concerned about the high welfare of the pupils under his care, need not be passive in the matter. In emergencies it is still possible for the teacher to extend a friendly but warning hand to some boy that seems to be losing his moorings, or to take the part of a bigger sister to the thoughtless girl ignorant of her directions. This individual counsel and the maintenance of a wholesome and moral tone in all the activities of the school will be found to accomplish much, and will be free from those possible dangers that lie in the formal public discussions of this theme so easily ill-timed and so readily misunderstood. The purely biological facts may be presented in connection with the study of plants and lower animals and the pupil himself be trusted to translate all this into higher terms.

The problem of the teaching of "Scientific temperance" and the effects of drugs and narcotics, also demands a wise caution on the part of the instructor. So much careful research work has been done recently in this field, that the teacher should familiarize himself with the actual results obtained. These are sufficiently positive to permit a vigorous campaign against all forms of

intemperance on the strictest physiological grounds. But this newer knowledge will save him from many of these loose statements often lurid and exaggerated, which tend to bring into discredit the substantial facts themselves. Not only medicine but business, factories and shops have all spoken in unmistakable terms about the inefficiency of the user of alcohol and indicated his elimination from all fields of high responsibility, and this not so much for sentimental or moral reasons as for the cold physiological reason, that drinkers' services do not pay.

And now in conclusion let me add that the course in physiology will not have been wholly ineffective if it has at least done these two things: First, the pupil should have such knowledge of the location, structure and function of the important organs as to appreciate that the body is an organism able to flourish in obedience to definite and rational laws. The pupil is not to be a surgeon, he is not to be a physiologist. Thousands of details may be spared him. But he is entitled to the vision, even in his simple exercises in anatomy and physiology, that law and order prevail in living tissues and so enable him later to sense the distinction between a fact of life and the many current superstitions.

In the second place the pupil should know enough of the problems of sanitation and the fight against disease, so as to understand the value of efforts in this direction, and to give intelligent support to all worthy movements of society which have for their object the conservation of human life. On the securing of these merely practical results, the inspiring teacher will find that he has been dealing with subject matter capable of yielding valuable scientific training, and educative in broad and liberal ways.

General Discussion.

Suggestions for the improvement of physiology in the high school were given, it being very evident that the work in high schools is not satisfactory, at least to the teachers themselves.

Motions were made and carried:

That physiology be made a seven-hour-a-week subject like botany and zoology;

That physiology be placed after the other sciences in the curriculum;

That it should not be crowded out by general science;

That the time for the subject in the high school course be optional with the school in each case and not controlled by the State laws and that the Legislature be requested to make the necessary changes in our laws so that this time can be optional.

Suggestions were made:

That definite problems be taken up by our section, one of which should be the standardization of the biology courses in the high school;

That mammals be studied in the winter and that we do not adhere too strongly to the plan which starts with the Protozoa and continues up the scale to the highest animals;

That the State University prepare students especially for biology teaching and that this matter be brought before the University authorities by the executive committee of our section.

A motion was made and carried that a committee on sequence and minimum content of biology courses in the high school be appointed.

In the discussion of this motion the following suggestions were made:

That this committee be a permanent one,

That a year in biology be substituted for a half year of botany and a half year of zoology.

That the committee get in touch with the reorganization committee of the National Educational Association.

That the sequence of natural sciences be as follows: earth science, botany, zoology, and physiology.

That the determination of the proper sequence be a problem for this committee.

A motion was made and carried that the section express its appreciation to those who arranged the programme.

The nominating committee reported Mr. J. L. Pricer as a new member of the executive committee of the section. Mr. Pricer was elected by a vote of the section.

T. L. Hankinson, Secretary.

Classics Section

The Section was called to order by the chairman, Professor H. J. Barton. The first business in order was the election of a member to serve three years on the executive committee of the Section. Miss Laura B. Woodruff of Oak Park, Ill., was elected to the position. The committee of the Section therefore consists of the following,—Principal E. S. Lake, Benton, Ill., Miss Harriet L. Bouldin, Springfield, Ill., and Miss Laura B. Woodruff, Oak Park, Ill.

The first paper was given by Mr. J. C. Browne, principal of the University Training School; his subject was,—"A Synopsis of Investigation of preferences of High School pupils for the various subjects of the curriculum and of the reasons for the preferences". It was an endeavor to secure fairly accurate results, though from a small field, and emphasized the value of interest. Mr. Browne said in part,—

Synopsis of Investigation of Preferences of High School Pupils for the Various Subjects of the Curriculum and of the Reasons for the Preferences.

Most school men will admit that genuine interest in a subject lies very near the basis for successful work in it. A given subject may be very interesting to an adult and very uninteresting to a boy or a girl in the high school. Some educators seem to interpret interest in a subject largely in terms of their own rather than in terms of the pupil's interest.

Interest in a subject is probably the best guarantee of attention and attention is an essential factor in achievement in school activities. Since interest is such a prominent factor in the successful pursuance of a school subject, surely the pupil's interest should be a matter of great concern to the alert supervisor and teacher.

A study of the preference of pupils for the various subjects and of their reasons for considering a subject relatively useful or useless suggests many important queries.

If it be found that a given subject ranks high in preference in a school or in several schools, the question at once arises, why is this true? Is it because of some inherent interest in the subject, or because of the manner in which the subject is taught? Do pupils prefer the academic or the vocational and industrial subjects? Do they prefer subjects that require a relatively high degree of effort?

What are the reasons which pupils believe justify a subject? To what extent do these reasons correlate with the adult point of view?

What subjects do pupils regard as relatively useless, and why?

Can these subjects be so reorganized and so taught without detriment to the subject that they will rank higher on the basis of preference? How do the preference of boys and girls for the various subjects compare? Are the reasons assigned for the like or the dislike of a subject the same? How does achievement in a subject correlate with preference for that subject?

All of these questions and many others which might properly be suggested, are pertinent questions for the alert supervisor and teacher.

I have neither the time nor the ability to answer all of the questions just proposed, but the data to which I shall call your attention furnish a basis for answering some of the questions.

Ranking of Subjects in Horace Mann School, New York City, Based on First Preference

BOYS Rank		%	GIRLS Rank		%
1	Chem.	41	1	Engl.	31
2	Alg.	32	2	Hist.	14
3	Geom.	18	2	Arith.	14
3	M. Tr.	18	4	Trig.	13
5	Eng.	14	5	Geom.	12
5	Hygiene	14	6	Household Arts	10
7	Hist.	13	7	Geogr.	9
8	Arith.	9	8	Latin	8
8	Germ.	9	8	Germ.	8
10	Latin	8	10	French	7
11	Phys.	5	10	Alg.	7
11	French	5	12	Physics	6
13	Geogr.	4	13	Hygiene	5
14	Art	3	14	Chem.	4
15	Trig.	0	14	Art	4

The Math. subjs. comb. rank 1st among boys and 3rd among girls.

The science subjs. comb. rank 2nd among boys and 12th among girls.

If the data for boys and girls are combined Latin ranks 10th on the basis of preference.

When the data for the first three choices are considered Latin ranks 9th among both boys and girls.

When the subjects are ranked on the basis of the number naming them as last choice, Latin ranks 13th out of 15 for the boys, and 15th out of 15 for the girls.

On the basis of utility the subjects ranked as follows, 1st choice only:

Rank	BOYS	Rank	GIRLS
1	Arith.	1	Engl.
2	Engl.	2	Arith.
3	Phys.	3	Trig.
4	Geom.	4	House. Arts
5	Alg.	5	Hygiene
6	Germ.	6	Hist. and German
7	Chem.	8	Latin and Geogr.
8	Trig.	10	French
9	French	11	Geom.
10	Hygiene	12	Alg.
11	Latin	13	Physics. Art.
12	Hist.	15	Chem.
13	Geogr.		
14	Art		
15	Man. Tr.		

On the basis of uselessness Latin ranks 14th out of 15 among both boys and girls, art being the only subject which is ranked lower when the data are combined.

More pupils prefer to drop Latin than any other subject, 42% of the boys, and 35% of the girls taking the subject indicated a desire to drop it.

Ranking of Subjects as Judged by First Preeerence

	DECATUR		DUBUQUE		HACKENSACK	
	Boys	Girls	Boys	Girls	Boys	Girls
1.	Bookkeeping	Stenography	Trigonom.	Grammar	Arithmetic	Dom. Science
2.	Algebra	Bookkeeping	Chemistry	English	Bookkeeping	Arithmetic
3.	Mech. Dr.	English	Man. Tr.	Dom. Science	Geometry	Bookkeeping
4.	Arithmetic	Dom. Science	Physics	Typewriting	Algebra	Spanish
5.	Man. Tr.	Art	Bookkeeping	Stenography	Physics	Typewriting
6.	Physics	Algebra	Grammar	Latin	Spanish	Stenography
7.	Phys. Geog.	Physics	Mech. Dra.	Geometry	Typewriting	English
8.	Chemistry	Arithmetic	Geometry	Bookkeeping	Stenography	Algebra
9.	Geometry	Typewriting	English	Arithmetic	Trigonom.	German
10.	Typewriting	German	Economics	Psychology	English	Geometry
11.	English	Latin	Algebra	Algebra	Chemistry	French
12.	German	Chemistry	Stenography	Physics	Ele. Science	Civics
13.	Civics	Civics	Arithmetic	Chemistry	Geography	Art
14.	History	Physiology	History	German	Penmanship	Chemistry
15.	Zoology	Botany	Typewriting	Phys. Geog.	German	History
16.	Latin	History	German	History	History	Phys. Geog.
17.	Stenography	Geometry	French		Man. Tr.	Latin
18.	Art	Phys. Geog.	Latin		Latin	Geography
19.	Botany	Zoology	Phys. Geog.		Phys. Geog.	Ele. Science
20.	Physiology	Grammar			French	Physics
21.	Grammar				Grammar	Grammar
22.	Geography					Penmanship
23.						Manual Tr.

Ranking of Subjects as Judged by Last Choice

	DECATUR		DUBUQUE		HACKENSACK	
	Boys	Girls	Boys	Girls	Boys	Girls
1.	Algebra	Stenography	Trigonom.	Stenography	Arithmetic	English
2.	Bookkeeping	Algebra	Chemistry	Dom. Science	Spanish	Stenography
3.	Geometry	Botany	Physics	Grammar	Stenography	Grammar
4.	Arithmetic	English	English	English	Trigonom.	Spanish
5.	Mech. Dr.	Dom. Science	Bookkeeping	Arithmetic	Geometry	Geography
6.	Physics	Arithmetic	Grammar	Bookkeeping	Bookkeeping	Dom. Science
7.	Civics	Bookkeeping	Arithmetic	Typewriting	Grammar	French
8.	English	Typewriting	History	Latin	Algebra	Typewriting
9.	Typewriting	German	Stenography	Algebra	Typewriting	Art
10.	Man. Tr.	Grammar	Manual Tr.	Phys. Geog.	Chemistry	German
11.	Botany	Art	Geometry	Geometry	Geography	Arithmetic
12.	Chemistry	Latin	Algebra	History	French	Bookkeeping
13.	German	Geometry	Economics	German	Penmanship	Algebra
14.	History	Physiology	Mech. Dr.	Physics	Ele. Science	Geometry
15.	Physiology	Phys. Geog.	Phys. Geog.	Chemistry	Physics	Penmanship
16.	Grammar	Chemistry	French	Psychology	German	Latin
17.	Zoology	Zoology	Typewriting		Manual Tr.	Chemistry
18.	Phys. Geog.	History	Latin		English	History
19.	Stenography	Physics	German		History	Physics
20.	Art	Civics			Phys. Geog.	Civics
21.	Geography				Latin	Physical Geog.
22.	Latin					Elem. Science
23.						Manual Train.

RANK OF SUBJECTS BASED ON PER CENT. OF PUPILS WISHING TO DROP THEM

	DECATUR		DUBUQUE		HACKENSACK	
	Boys	Girls	Boys	Girls	Boys	Girls
1.	Botany	Botany	Arithmetic	Arithmetic	Grammar	Grammar
2.	Chemistry	Chemistry	Grammar	Grammar	Spanish	Geography
3.	Physiology	Physiology	Typewriting	Psychology	Geometry	Penmanship
4.	Grammar	Grammar	English	Stenography	Stenography	Civics
5.	Geography	English	Bookkeeping	Typewriting	Arithmetic	English
6.	Arithmetic	Algebra	Physics	English	Geography	Stenography
7.	Bookkeeping	Arithmetic	Algebra	Dom. Science	Phys. Geog.	Typewriting
8.	Algebra	Dom. Science	Mech. Dr.	Bookkeeping	Trigonom.	French
9.	Civics	Typewriting	Stenography	Geometry	Bookkeeping	Arithmetic
10.	Mech. Dr.	Stenography	Man. Tr.	Latin	English	German
11.	English	Phys. Geog.	Chemistry	German	Typewriting	Dom. Science
12.	Physics	Latin	Geometry	Algebra	Algebra	Art
13.	Phys. Geog.	German	Economics	Phys. Geog.	Chemistry	Bookkeeping
14.	Art	Art	Trigonom.	Physics	Penmanship	Geometry
15.	Typewriting	Bookkeeping	Phys. Geog.	History	Ele. Science	Spanish
16.	Man. Tr.	Civics	History	Chemistry	Man. Tr.	Algebra
17.	Geometry	History	German		Physics	History
18.	Latin	Geometry	Latin		German	Latin
19.	History	Zoology	French		French	Chemistry
20.	German	Physics			Latin	Physics
21.	Stenography				History	Man. Tr.
22.	Zoology					Ele. Science
23.						Phys. Geog.

The Section had in the past through committees reported on the work of the first, second, and third year in Latin in the high school. This year the work of the third year in Latin was further discussed. The subject was introduced by a paper by Professor Isabella T. Machan, James Millikin University, Decatur, Ill., entitled "Literature to be read and method of procedure". Professor Machan spoke as follows:

The report of the committee appointed last year to consider the work of the third year High School Latin calls attention to the fact that, for a number of years, teachers have been given more liberty in the choice of the literature to be read in the different years of High School Latin; and it mentions some of the plans which have been tried in varying the work of the third year's reading.

Cicero's four orations against Catiline, the oration for the Manilian Law, and the oration for Archias, or their equivalent must be read to meet the college requirements in Latin for that year. The works that have been suggested, either to supplement or to take the place of a part of the orations mentioned, are selections from Cicero's other orations, his letters, De Senectute, and De Aimicitia; from Sallust's Catiline and Jugurthine War; from the letters of Pliny; and from Ovid, Terence's Phormio has also been read by some third year High School classes.

I think that we all believe that the colleges have taken the right step in making this wider range of reading possible, by requiring only a prescribed portion of the orations mentioned to be read with a view to examination; and by insisting that the pupil shall show facility in sight translation, which is, after all, the real test of knowledge of a language. I think that the colleges may well give still greater latitude to the High School teacher, by not insisting too rigidly that a specified amount of Latin be read in the third year. If a

pupil can pass the examination set by the college, he has met the necessary requirements. Some classes would have a better knowledge of Latin if the amount required to be read were lessened slightly, and more time spent on the other essential features; while on the other hand, some classes can and do read profitably more than the required amount.

The committee in its report makes no specific recommendation as to what orations can best be omitted, or what selections can most profitably be substituted; and indeed that would be a difficult task. The choice should rest with the teacher, who is conversant with the needs of his class; for work that can be done successfully with one class, may not be so well suited to another. Under the old rigid requirements, teachers have some times been kept from doing the work that they deemed most beneficial for their pupils. The teacher, also, would find it stimulating to vary the selections from time to time. The variation in the work would doubtless add to the enthusiasm of the instructor by its freshness, and enthusiasm is contagious. There is always danger that a teacher who reads over and over the same selections will fall into a rut; and that his work will become merely mechanical. If this happens, it is quite possible that he will fail to interest his pupils.

I suppose that most of us would agree that Cicero should be the principal author read during the third year; but I do not agree with the remark quoted from Prof. D'ooge by the committee that, "Cicero is so versatile and fascinating a writer that there is no difficulty in planning an attractive course for the third year from his writings alone." I grant that this would be true for more mature students, but I am of the opinion, that, if we are to change from the old requirements, the works of some other authors should be substituted for those orations which are omitted. In fact, some teachers say that they prefer to give Cicero in the fourth year, so that their pupils may be more mature and therefore better able to appreciate his writings.

In planning the course, we have to remember that our pupils are gradually dropping out of the Latin classes as they advance. It is said that, of every one hundred pupils beginning Latin, not over twenty-five continue the subject four years, and of this twenty-five only four elect Latin in college. For this reason, I believe that it would be a good plan to give the third year people a taste of Latin poetry. In our academy, we have made a practice of reading some selections from Ovid at the close of the third year, and the pupils always manifest much interest in this part of the work. Besides Ovid makes a good bridge to the next year's Virgil.

The following plan might be an interesting experiment: to substitute Sallust's Conspiracy of Catiline for the second and fourth Catilinarian orations, or to read selections at sight from it in connection with those orations; to postpone the Archias to the close of the fourth year, and to substitute in its place selections from Ovid. I believe that the pupils would at the close of their fourth year take up their Cicero again with new zest and better appreciation of the oration as a piece of literature. Time for this oration could be made in the fourth year if the fifth book of the Aeneid should be omitted from the intensive reading and used only for sight work.

The method of procedure suggested by the committee is an excellent one, and the statement that the work should be made "so much alive that the class will realize that it is studying not alone the past, but the present as well" is a very important point upon which many teachers do not lay enough stress.

The committee is of the opinion that it is difficult for teachers to find time for all that it is desirable to accomplish, and at the same time to read an amount equivalent to the six orations. As I have said, this is certainly true in the case of some classes; and I think that the teacher should have the privilege of somewhat shortening the amount of reading, whenever it seems advisable.

This paper was followed by one on "History, institutions, and private life" by Miss Sophronia M. Kent of Jacksonville, Ill. Miss Kent presented a survey of the material that was of great value. She spoke as follows:

CLASSICAL SECTION. ILLINOIS HIGH SCHOOL CONFERENCE

"Supplementary Work for Third Year Latin."

The world of today is a world of action. In this age of automobiles, flying machines, wireless telegraphy and motion pictures, the boy or girl has no use for any subject which has no "go" in it. Instead of deploring this state of affairs, and exclaiming with Cicero, "O tempora! O mores!" it behooves us to adapt ourselves to present-day conditions, and apply modern methods to a worthy cause,—the study of Latin. Someone has said "the problem of Latin is not of the intellect, but of the will." Every act must have a motive behind it. How, then, can we supply the motive power to keep our boys and girls on the "Latina Via" until they have learned its real worth, and have come to like Latin for Latin's sake.

The trend of modern education seems to be toward the laboratory method. How shall we equip and conduct our classical laboratory? The first essential is the apparatus. By this we mean maps and charts, reference books, pictures, casts, stereoptican slides, etc. At the last meeting of the classical conference, Professor Canter gave an excellent paper on "High School Equipment for Teachers of Latin and Ancient History." Numerous lists of this sort have been published from time to time in the various Classical Journals, so it will not be necessary to enumerate them at this time.

With our laboratory properly equipped, let us now consider methods of work. The two greatest stumbling blocks in the way of the reading of Latin literature are lack of vocabulary and complex sentence structure. You have all seen the perception cards which are used in first year work. Why could not the same idea be carried out for the Cicero class, using the word lists in Lodge's "Vocabulary of High School Latin?" These can easily be made with rubber stamping outfits, and the pupils enjoy doing the work. A five, or even three minute drill at the beginning of the period will fix the day's vocabulary in the mind of the pupil. Cicero pupils are not too old to enjoy a vocabulary match occasionally. The Latin games of principal parts and verb forms published by

The Latin Game Co., Appleton, Wis. are also helpful. The game of anagrams may also be adapted to Latin students by having them make as many Latin words as possible from the letters. Or the teacher may hold a letter so that all can see, and the pupil who can first call a Latin word beginning with that letter wins the card, (the same word not to be used twice).

If one wishes to carry the laboratory method farther, there are two note-books that may be used: "The Latin Drill Book," published by Public School Publishing Co., Bloomington, Ill., and Garrett's "Latin Form Book," published by Atkinson, Mentzer & Co. I have used the latter in my own classes and found it very helpful. The first part is devoted to vocabulary. There are spaces for the English word, Latin word, class gender, etc., and derivative word. Mimeographed lists from Lodge's "Vocabulary of High School Latin" are given to the pupils and they make their own vocabularies as they study each lesson. The derivative words are not compulsory but the pupil is graded according to the number he secures. Two criticisms may be offered on this method: The amount of time it takes, and the fact that the pupil learns only one meaning. However it has many good points.

The study of English derivatives should be emphasized in the third year. Those who are studying History, Mathematics, English, Civics, etc. may be asked to bring to class lists of English derivatives taken from a paragraph of the day's lesson in those subjects. Or the class may be assigned a number of Latin words to see who can find the most derivatives. Miss Sabin has recently published a derivative blank which comes in pads of fifteen, (15). Pupils who have ability in drawing may be asked to illustrate some of the most interesting derivatives.

A graphic method of indicating the structure of the complex sentence by a system of braces, brackets, and parentheses is suggested in the Classical Journal for March 1913: the braces to be used for noun elements, brackets for adjectives, and parentheses for adverbial phrases or clauses. The greatest obstacle in the way of this plan would be the pupils' lack of ability to determine whether it was a noun, adjective or adverbial element. Another device is to underline these elements in different colored chalks or to underline the main and subordinate verbs in different colors. The subject and introductory word of the clause should agree with the verb in color. If the pupil has trouble in separating clauses, he may be asked to make a list of clauses, underlining the subject, verb, and introductory word of each clause.

As aids in reviewing syntax work and forms, each pupil may be assigned one or more lines in the lesson and be held responsible for all forms and syntax in his assignment, allowing the others to ask him questions. A syntax game suggested by Miss Sabin is as follows: Write on a card ten English examples of ideas back of constructions. Have the teacher or a pupil read these with their respective numbers. The others will put down the number and name of construction as they think it should be. Papers are then exchanged and the correct answers read, counting five points for each correct answer. Another method of fixing constructions is to ask the pupils to bring examples from newspapers and magazines of similar uses in English. For emphasizing clear

and concise English expression, read a passage until the thought is clear to all, then ask the class to express the idea in finished English. Choose judges to grade the pupils on exactness of thought as compared to the original, the quality of English and delivery.

Nothing arouses quite so much interest or makes the work more vital than dramatizations of certain portions of the text. The Classical Journal of Nov., 1909 suggests four scenes from Cicero, given by the Roman State of the East High School, Rochester, N. Y. The first scene represents the famous meeting of the Catilinarian conspirators at the house of Laeca. The second scene shows Cicero at his home debating with his friend Atticus the course to be followed. The third scene represents the Senate on Nov. 8th. The senators assemble amid great excitement; the consul is about to lay the matter before the Senate when Catiline enters the room. The fourth scene represents the Senate meeting of December, when the fate of the conspirators was decided. To these scenes may be added "The Trial of Archias." "Catiline," in Vol. 2 of Ben Johnson's Plays, is rather long and elaborate, but furnishes excellent material for correlation with the Catilinarian orations. The parts may be assigned to pupils and read in class from time to time.

No other author studied in High School gives us a better opportunity to come into vital touch with the life and history of the Roman people than does Cicero. This may be accomplished by lectures or comments by the teacher, assignment of topics for outside reading, lantern slides, pictures, etc. The girls will enjoy dressing dolls in Roman costumes to represent a consul, praetor, lictor, slave, Roman woman, Roman boy or girl, imperator, legatus; while the boy can make models of helmets, shields, spears, fasces, writing tablets, ships, a model of the Seven Hills in sand or clay, a Roman house, and a plan of the Forum. Some of the most interesting topics for outside references are: The Roman House, Streets and Pavements, Roman Costumes, Education, the Senate and Magistrate, Legal Procedure, Manuscripts, Amusements, Trades, Municipal Politics, Vestal Virgins, Roman Forum, etc. "McKinley's Illustrated Topics for Ancient History" furnish valuable material along this line.

In the Oak Park High School, Parallel Passage Books have been kept by the students. On one side of the page are written statements about features of Roman life in Cicero's time. On the opposite page are pasted references from newspapers, magazines, or other sources which afford a contrast or comparison with the life of the modern world. Cicero's Orations are rich in material of this sort. To quote from an article in the Classical Weekly. "The Secession of the Plebs" brings up modern strikes and the history-long struggle of the masses against the classes. Catiline lives again in Mexico. The "Manilian Law" leads us to trusts and syndicates and taxes and Wall Street and to the bankers' offices along the North side of the Forum, to Roman business methods and perhaps to Diocletian's interesting list of legally fixed prices, issued when he tried his hand at controlling by law the high cost of living. The "Archias" argues for us the value of a college education." A striking comparison between ancient and modern times was made recently in a speech entitled "Striding Backwards." The speaker said the five methods of making money today were

the same as those in Cicero's time, namely: fire insurance, real estate, speculation, cornering food stuffs, and graft in politics. Other topics common to ancient and modern times have been suggested by Miss Sabin in "The Relation of Latin to Practical Life".

While we may deplore the amount of time and money spent by our students at motion picture shows, we must admit their great value as an educational factor. A number of good classic pictures may be secured if you are fortunate enough to own the apparatus and if not, your local exhibitor can probably be persuaded to rent them if assured of school support. In some places the school is allowed a certain per cent of all tickets sold by the students. This method of making money to equip a Classical laboratory is not to be despised.

George Kleine, 166 N. State St., Chicago, has the largest number of educational pictures. The Appian Way, Roman Scenes, Artistic Rome, The River Tiber, Roman Promenades, and the Sacking of Rome, are among the reels listed. In addition to these the following feature pictures may be secured: Quo Vadis, Julius Caesar, Spartacus, Last Days of Pompeii and Antony and Cleopatra. Other classical pictures are: "Damon and Pythias," Universal Film Co., 210 W. 40th St., New York; "Cabiria," Itala Film Co., 210 W. 42nd St., New York; "At the Sign of the Cross," Paramount Picture Co., 220 W. 42nd St., New York; "The Eternal City," Famous Players Film Co., 213 W. 26th St., New York. While these pictures contain some inaccuracies of detail, they give a more vivid impression of Roman life and history than could be obtained in any other way.

The "Roman State" and "Roman Senate" seem to be the most popular organization for the third year classes. A description of the Roman State of the East High School, Rochester, N. Y., appeared in the classical Journal, Feb. 1907, and School Review, April, and May, 1906. A report of the Senate in the Oak Park High School appeared in the Classical Journal, April, 1915. The Cicero class of our High School organized a Senate last year. The officers are: two consuls; one praetor; two censors; two aediles; scribe and quaestor. It is a self governing organization. The pupils wrote the constitution and enforce the laws. The censors' duty is to report all members who are guilty of misconduct, use of translations, etc. When there are enough cases on docket, a trial is held where the praetor presides with great dignity, the censors act as prosecuting attorneys, and the defendant pleads his own case unless he chooses some one to represent him. After hearing the evidence, the Senate votes after the old Roman custom: a (absolvo), c (condemno), n. l. (non liquet). The sentence is then pronounced. The Senate has a rule that any person who fails to recite three times in succession must translate and recite to the class a certain number of lines, these to be assigned by the dictator. The extreme penalty is exile from class.

If your school is not already over-organized, a Latin club may be very enjoyable. A hand book for the use of Latin Clubs has been prepared by Miss Suzan Paxson of the Omaha High School and will be issued in the near future. This book contains thirty-six programs, with references; about sixty poems referring to classical themes, twelve songs, with music and trans-

lation, and a list of books needed in a High School library to enable the work of a Latin Club to be carried on. Three excellent programs are given in the year book of the Francis W. Parker High School, Vol. 2, June 1913 (35c). Debates are always enjoyed by Cicero students and the Orations themselves furnish many questions. Music for programs may be found in "Latin Hymns," published by Benjamin Sanborn & Co., and "Latin Songs" by Putnam Sons.

Among Latin Plays the "Roman Wedding" and "Roman School" by Miss Paxon; "A School Boy's Dream," Classical Journal, Jan., 1912; "Decem Fabulae," Oxford University Press; and the "Vestal Virgins' Drill," Edgar S. Werner & Co., 43 E. 19th St., New York, seem to be the most popular. Ben Johnson's "Catiline" is also excellent, but would require much more time and work for presentation.

Other forms of entertainment suggested are: Roman banquets; Olympian games (Classical Journal, Dec. 1911); charades illustrating Latin words; an ancient history character social (Classical Journal, Nov. 1908); celebration of the Saturnalia (Classical Journal, March 1913); a mock funeral of Caesar on the Ides of March; a triumphal march; etc. Lincoln's birthday might be celebrated by the singing of America in Latin, and delivery of Lincoln's Gettysburg Address in Latin (Classical Journal April 1912) by a pupil in Roman costume. A guessing game is described in the Classical Journal, Dec. 1911 in which a list of questions are asked, the answers to be Latin words, which when spelled, translate some word in the question and when pronounced, answer the question: Example—what are men when they are tired? Viri—(Weary). Why did our forefathers use a ladder? Noster—(no stair). In the South Omaha High School, a mock trial was held. Virgil, Cicero, and Caesar were summoned from Hades by Mercury by telephone and brought before the classical court. Virgil and Cicero were acquitted, but Caesar was condemned and sentenced to build a bridge across the Missouri like the one across the Rhine and explain its construction to every pupil who came.

Many schools publish school papers and they are a valuable means of arousing interest in the study of Latin. However, if continued for any great length of time, the material becomes exhausted and after the newness wears off, the pupils are apt to lose interest and leave the burden upon the shoulders of the already over-worked teacher. Bulletin boards may be substituted for a paper and are much less of a burden. All sorts of materials may be used and the pupils themselves will have many original ideas to suggest. Among other things may be mentioned, jokes, blunders in translation, Mother Goose Rhymes in Latin, quotations descriptive of pupils and teachers, letters to Santa Claus, imaginary letters from characters in the text, New Year's resolutions in Latin, cartoons relating to ancient times, articles comparing ancient and modern times, Latin names of familiar songs or stories, such as "Domus, Dulcis Domus," "Ubi, Alicia, Es?" "Postrema Rosa Aestatis;" pen drawings illustrating selections from the text; advertisements in Latin; and views of prominent men on the value of Latin. Last, but not least, the Latin exhibit, "Relation of Latin to Practical Life" will furnish material which may be used in an endless number of ways.

With all this material in our laboratory, the problem now becomes, how can we use this material to arouse a vital interest in the study of Latin, and still keep it subservient to the real issue,—the reading of Latin Literature? This problem, I leave with you.

In closing, I wish to acknowledge my indebtedness to Miss Laura Woodruff of Oak Park High School for the use of her excellent report on "Supplementary Material" and to Miss Sabin of Wisconsin University whose "Handbook for Latin Teachers is full of valuable ideas for the teaching of Latin.

After discussion, Mr. J. O. Lofberg, Oak Park, Ill., presented a paper entitled "The Reorganization of the High School Course in Latin". Mr. Lofberg first presented a summary of the report of the committee of the Classical Association of the Middle West and South, given at Nashville, Tenn., in April, 1915, and then outlined a course that would, as he thought, be more attractive than the standard course of the high schools. He argued against the amount of Caesar now read. He spoke in part as follows:

At the meeting of the Classical Association of the Middle West and South, last spring, a preliminary report on the "Study of Latin in the ninth and Higher Grades of the High Schools" in the territory covered by the Association, was given by a committee of three. These three you may remember were Miss Kirby, Miss Witherspoon and Miss Bouldin. I have been asked to review this report with you.

In preparation for its report the committee sent a questionnaire to the state vice-presidents of the Association. All but three replied. The following were the questions asked:

I. a. What is the present reading course in Latin in your state?

II. a. Is there an agitation to change the complete course?

b. Is there an agitation to change the Caesar year only?

III. a. What change has been suggested in the full reading course?

b. What has been suggested to lead to or take the place of Caesar?

IV. What suggestions do you offer personally?

The following constitutes the replies:

I. (The reading course.) For the tenth or Caesar year: In most schools Caesar is read at once. The following "Caesar" substitutes are used for a part of the year in some schools:

1. Nutting's Reader.

2. Ritchie's "Fabulæ Faciles."

3. The Story of a Roman Boy (where D'Ooge's Beginner's Book is used).

4. Viri Romae.

5. Nepos.

For the eleventh year Cicero was universally read, and in the twelfth, six books of Virgil's Aeneid in most schools.

II. (Agitation for a change in the reading course.): Only four answers indicated uneasiness in regard to the course as a whole. However, Ovid, Sallust's Catiline, Cicero's Letters, were suggested as substitutes for some of Cicero's Orations; and Ovid and the De Senectute for some of Virgil.

No state suggested entire elimination of Caesar in the tenth grade. But the general feeling was that some change of reading be made. This change consisted of one or both of two things:

1. A term of easy reading before Caesar.

2. Substitution of other reading (allowed by the Commission) for a part of Caesar.

IV. (The replies may be summarized as follows:)

1. That greater freedom and variety in the course is desired.

2. That no radical change is desired in the eleventh and twelfth years.

3. That there is difficulty in covering the amount prescribed, particularly in the tenth year. (This was mentioned in nearly every letter.)

4. That the rigid demands of the College entrance requirements as to quantity are at fault. With the added demands on the time of pupils; with the increasing number of double period subjects, the pupils do not have the time they had ten years ago.

5. That no tenth year can be very satisfactory if all preparatory work has been covered in one year.

6. That the so-called Caesar year must undergo a complete change in content.

The committee came to the conclusion that the last mentioned suggestion was especially true. Some change that would make the tenth year richer in content is extremely desirable:

1. For the benefit of the large percentage of pupils who drop Latin at the end of their Caesar work.

2. As an incentive to a larger percentage of pupils to continue their Latin throughout the course.

On the strength of these replies a Suggestive Course of Study was submitted:

9B and 9A Latin (for beginners). Five periods a week. Special study is to be given to the forms; special attention to English derivatives; the translation of easy Latin at sight and hearing; and the writing of simple Latin.

10B Latin. Five periods a week.

"Fabulæ Faciles" or some other easy reading, 10 weeks.

Selections from the "Gallic War" 8 weeks.

Latin Prose Composition, 15 lessons, or more if desired.

10A Latin. Five periods a week.

Selections from Caesar's Gallic War, 12 weeks.

Rapid reading selected from Ovid or from Bice's Sight Reading in Latin, 6 weeks.

Prose Composition, 15 lessons or more if desired.

Reading from Caesar's Gallic War amounting to two books to be selected from the following:

Book I. The War with the Helvetii, 1-28.

Book II. The War with the Belgæ, 1-28.

Book III. The campaign against the Veneti, 7-16.

Book IV. The First Invasion of Germany, 1-19.

Book IV. The First Invasion of Britain, 20-36.

Book V. The Second Invasion of Britain, 1-23.

Book VI. The Second Invasion of Germany, 9-29.

Book VII. General Uprising of Gaul, 1-15.

Book VII. The Siege of Alesia, 68-90.

11B Latin. Five periods a week.

Cicero's Orations against Catiline, I, III, IV.
Latin Prose Composition, 15 lessons or more.

11A Latin. Five periods a week.

Cicero's Letters or the Manilian Law. 9 weeks.

Archias, 4 weeks.

Ovid's Metamorphoses or Terence's Phormio, 5 weeks.

Prose Composition 15 lessons, or more if desired.

12B Latin and *12A Latin.*

Virgil's Aeneid, Books I-VI.

A substitute may be made from Book V from the suggested list of supplementary reading.

*Latin Prose Composition if needed for College entrance.

The Committee added a suggestive list for Sight and Supplementary Reading throughout the course.

Decem Fabulæ.

D'Ooge's Puer Romanus and Hercules.

Fabulæ Faciles.

Bice's Sight Reading in Latin.

Ovid.

Terence's Phormio (H. S. Edition.)

Cicero's Letters.

The Fourteenth Philippic.

De Amicitia.

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*Later.

De Senectute.

Sallust's Catiline.

Nepos.

Aulus Gellius.

Passages from the Vulgate.

In addition to reviewing the report, I was asked by your program committee to give my own views on the subject.

With the work in the Virgil year, it seems to me, we have very little reason for dissatisfaction. The usual books of the Aeneid read seem to suit very well the needs of the select few whom we are able to hold until that year. Perhaps the tedium of the third and fifth books might be relieved by reading parts of VII-XII, or some selections from Ovid. The matter does not impress me as serious, however.

It is in regard to the other three years of Latin that most of us, if we are honest, feel a considerable amount of dissatisfaction. Part of this is due to the fact that we feel in honor bound to teach Latin successfully to all pupils that are put into our classes, whether they can learn the subject or not. It seems to me extremely doubtful, if those who can not learn the simplest fundamentals of grammar, gain anything, even mental drill, from months of agony in Latin. They would be much better off in some English classes especially suited to them.

Whatever our aims in the teaching of Latin are—and this is not the place where such need to be discussed—whether it be mental drill, which the educational psychologists have put into disrepute, whether it be language training and the development of a language sense; whether it is our purpose to keep alive an intimate interest in the best that has been thought, and felt and said; to instill into the coming citizens the realization that their leisure hours are of as much importance as their working hours, and that the future of America demands that we learn to spend this leisure in noble and elevating recreation; whether our aims be one or all of these, we must all agree that what we want is that the pupil shall learn to read Latin; and he wants to learn to read it too, and unless he does learn to read it, no matter what valuable benefits he derives from it, we cannot be thoroughly satisfied. I do not mean that after graduation from high school or college, ten or fifteen years later he is to be expected to read his Latin authors at sight. I mean that if he is to take any sincere interest in the subject while he is in school, he must be able to see that he is *getting on.* He can feel this when he learns to understand with fair ease what the ancients said. Nothing else will keep pupils in the Latin classes, or make them feel that there is something in it after all. (Of course *we* may know that the pupil is being benefitted in other ways that he does not at the time realize.)

Another thing that we are willing to admit is that what he reads should be worth his effort. The *student* (and how few there are!) will plod for two or three years through dreary fields and thorny stubble, because the inner voice tells him that the view beyond the hills is worth the cost. Not so the

mere *pupil.* An inferior view and a short cut to it are good enough for him. And after all is it necessary to make the journey to the promised land uninteresting?

Suppose we apply these two tests to the first three years of our High School. Does the average pupil learn to read and understand Latin? Is he trying to read something worth his effort?

To the first question we are all agreed that the answer is somewhat unanimous. Even the most optimistic are forced to admit that the ability to read Latin with understanding is becoming a lost art in our schools. (We speak, at least as if there was *once* this art.)

To the second question our answers do not have the same hearty ring of unanimity. Since these are to be my own views I feel free to add my "No" to numerous others. At least much that the pupil is expected to regard with delight, I cannot feel is worth it.

If it were my privilege to plan the work of the first three years, I should try to do it as follows:

In the first year I should bring the number of forms and the amount of syntax to be learned to the lowest possible irreducible minimum and fix these by the largest possible amount of connected reading. Many regular and irregular forms that we usually insist on the pupil's knowing by the end of the first year are less important for reading than some of the constructions that we hurry over in our terrific haste at the close of the year's work. Carefully graded myths, anecdotes, stories of historical persons, and if absolutely necessary some of Caesar, would constitute this reading. The important thing would be to make it possible to read plenty of simple Latin—and then read some more. Surely the way to learn to read Latin is to read Latin. My own pupils often show very satisfactory knowledge of isolated forms, but sentences, clauses and phrases are continual sources of bewilderment to them. Forms that appear in a sentence or connected passage are quite different, in their estimation, from the isolated ones. They must begin to handle ideas and not mere words as soon as they can.

As early as possible in the first year, and from then on as long as they study Latin, I should try to provide them with continual drill on those oft-repeated phrases, idioms, and transitional words that pupils usually continue to "look up" in the vocabulary even in the third year.

It seems to me that we must openly admit that part of the second year must be devoted to the same sort of thing as the first. The learning of forms and constructions that have not been taken up in the first year, should begin the course. In connection with this more reading of the kind that was employed in the first year should be used. I am not ashamed to admit that to me Caesar was the hardest Latin I ever read. I can admit this with less sense of disgrace when I know it has been the experience of many others—even of Professor Gooddell.

Our colleagues in the German Departments tell us that to read any classics of length such as "Wilhelm Tell" in the second or third year is now out of date. Their stories are now of about thirty pages in length,

at the most. In fact they read no classics if they can help it while the pupil is struggling with the idioms of the language. He is likely to learn no German and enjoy no Classic. The desire to acquire a speaking ability in the German may have a great deal to do with this, I admit. But the analogy is worth considering. There is usually about as much difficulty in mastering the idioms of Latin as in German.

Such a course as the one mentioned is suggested by Professor Leiper (Cl. J. March, 1912). It has the advantage of having been tried by him with very satisfactory results, so I shall give it. It was only by chance that I happened to find the article and I was amazed to see how my own ideas and his coincided. If it were not for the fact that I am sure I had not read the article, I should think that this was another example of the danger of thinking that one's views are one's own.

Nepos—Hannibal, Themistocles, Cato.

Caesar—Book I, Chapter 1.

Book IV, 20-36, First Invasion of Britain.

Book V, 1-23, Second Invasion of Britain.

Book IV, 1-19, First Invasion of Germany.

Book VI, Chaps. 9-29, Second Invasion of Germany.

Five hundred lines taken from other authors of prose and verse as, Curtius, Catullus, Cicero, Livy, Horace, Ovid, and Virgil.

I should desire less Caesar and some more of the other writers mentioned in the report that I have read; Aulus Gellius, or even selections from Viri Tomæ and Fabulæ Faciles. If Cicero is to be the backbone of the third year's work, it would not seem wise to read any of his works in this year.

Of course I am not blind to the fact that this plan seems to defeat one of the purposes for which Caesar is usually read—to gain a considerable amount of practice in reading one author with fairly limited vocabulary. Prof. Leiper decreases the number of lines to be read in the second year in order to meet this difficulty. If this is necessary, that is surely better than to do as we do now. But I believe it is not begging the question, to insist that if the first year's work is conducted on the plan I have suggested, the pupils will be able to read as much in quantity as the college entrance requirements demand. I have at last reached that without which no discussion of this subject is complete—the college entrance requirements. The only feeling I have on that subject is this. I see no reason that the colleges should require any more than this—ability to do the work of the Freshmen year. To prepare for this the high schools should be left free to read whatever is desirable in quantity or subject matter. Personally I feel that their demands as to quantity are not too high. I should be ashamed to do less.

Neither is it begging the question to insist that the increased amount of interest on the part of the pupils who will be reading material that they can better grasp, will make it possible to read as much, if not more than, under the present arrangement.

The four Catilinarians were of course chosen as were the books of Caesar to make the question of vocabulary easier. But if the pupil has had the previously outlined course of reading his vocabulary will be materially strengthened. Even as it is some of us have been brave enough to content ourselves with two of the attacks on Catiline. We should hardly have to leave Cicero to make a very enjoyable and profitable course. The Archias; the Verres; selections from the easier letters and from the philosophical works, De Amicitia and De Senectute. The pupil will of course be handicapped by his ignorance of philosophical points of view, of the policies and politics of the times. But it will be far better for him to struggle with some of this and learn that there was something for people to think about beside the unattractive and monotonous speeches that we usually read.

A well known Chicago teacher has recently tried something that will be of interest here. He had always been convinced that the Letters contained too many difficulties for high school pupils. Last year in deference to the insistent demands of his pupils that they be allowed to try the Letters in their edition (the Allen & Greenough) he substituted some of them for the usual orations. The result was so gratifying that this year he is going to do the same thing. He also read with his Cicero class Pliny's description of the Eruption of Vesuvius. The fact that this year he intends to edit for use in his class some of Pliny's Letters, shows us what the result was. No one who knows this instructor and his sound scholarly traits could accuse him of being led astray from the ways of sound training and study of Latin to the enticing fields where the pupil's "interest and enjoyment" are the chief objects of consideration.

To edit such texts as those we need—where can we find the genius for that? We shake our heads as we have been doing for fifteen or more years and say "It can't be done. Look at the 'Second Year Texts' that have been tried, and how unsuccessful they have been. Why do we come back to Caesar after it all?" But have these texts been given a fair trial? Have the colleges fully sympathized with our efforts in this matter? Further. Does there exist in common use a First Year in Latin which makes the pupils learn to translate? And do not all Second Year books presume that most of the so called "fundamentals" are already well drilled into the pupils' consciousness?

At any rate, unless the next ten years are to hold no brighter prospects for us, we must find the genius.

Any radical change would also meet with much opposition from those who are not intimately acquainted with the high school problem. This would mean instructors in private preparatory schools and undoubtedly the colleges. They would argue that pupils brought up on this less concentrated system, would probably prove extremely unsatisfactory. But that remains to be seen. Even if it were utterly true, we might be doing something for the 96% that never enter college. And more than that the schools in which such a course is not needed will be free to stick to the old scheme.

Most of us have been brought to feel that no other subject but the "war" has been so much discussed in print and before audiences. We feel like throwing away the Journals that exhaust the difficulties of the situation; we plan how to avoid listening to the discussion, without running away when the subject is brought up. And still—the "war" is a reality. I am in no position of authority; it is not for me to present a program of "preparedness" for you to follow. But as for me, I know not what course others may take, I should like to take the one I have mentioned—and I believe it would work, if the school board gave me carte blanche to try it for four years and some of you would help me with the proper texts.

The program of the morning was concluded with a report of the committee on Library Equipment, Miss Ada Stewart, Peoria, Ill., chairman. The report is as follows:

A list of books recommended for a high school classical library by the Classical Section of the University of Illinois Conference. Books marked thus (*) constitute a minimum list.

I. Language.

a. General.

*Bennett & Bristol. The Teaching of Greek and Latin in High Schools, 1.50, Longmans.

Kelsey, F. W. Latin and Greek in American Education, 1.50, MacMillan.

Tolman, H. C. The Art of Translating, .70, Sanborn.

Weil, H. The Order of Words in the Ancient Languages Compared with that of Modern Languages, 1.25, Ginn.

b. Latin.

*Bennett, C. E. The Latin Language, 1.00, A. & B.

Bennett, C. E. Syntax of Early Latin: Vol. I, the Verb; Vol. II, the Case Constructions, 4.00 each, A. & B.

*Byrne, L. The Syntax of High School Latin, .75, U. of C. Press.

*Gildersleeve & Lodge. Gildersleeve's Latin Grammar, 1.25, Heath.

*Harper's Latin Dictionary, edited by E. A. Andrews, 6.50, A. B. C.

Jenks, P. R. Manual of Latin Word Formation, .50, Heath.

Lewis, C. T. Elementary Latin Dictionary, 2.00, A. B. C.

*Lewis, C. T. A Latin Dictionary for Schools, 4.50, A. B. C.

Lindsay, W. M. The Latin Language, 5.25, Oxford.

*Lindsay, W. M. A Short History of the Latin Language, 1.40, Oxford.

*Lodge, G. Vocabulary of High School Latin, 1.50, Teachers' College, New York.

Potts, A. W. Hints toward Latin Prose Composition, .75, Macmillan.

*Shumway, E. S. A Handbook of Latin Synonymes, .30, Ginn.

White, J. T. English-Latin Dictionary, 1.50, Ginn.

c. Greek.

*Goodwin, W. W. Greek Grammar, 1.50, Ginn.

**or* Hadley-Allen. Greek Grammar, 1.50, A. B. C.

Goodwin, W. W. Syntax of the Moods and Tenses of the Greek Verb, 2.00, Ginn.

*Liddell & Scott, Greek Lexicon, 10.00, Intermediate, 3.50, Oxford.

*Monro, D. B. A Grammar of the Homeric Dialect, 3.50, Oxford.

Yonge, C. D. English-Greek Lexicon, 4.50, A. B. C.

Seymour, T. D. Introduction to the Language and Verse of Homer, .75, Ginn.

II. Mythology and Religion.

*Bailey. The Religion of Ancient Rome, .40, Open Court Pub. Co., Chicago.

*Bulfinch, T. The Age of Fable. Everyman's Library, .35, Dutton.

*Fairbanks, A. The Mythology of Greece and Rome, 1.50, Appleton.

*Gayley, C. M. Classic Myths in English Literature, 1.50, Ginn.

*Guerber, H. A. Myths of Greece and Rome, 1.50, A. B. C.

*Smith & Marindin. A Classical Dictionary of Greek and Roman Biography, Mythology and Geography, 6.00, Appleton.

Smith, Wm. Dictionary of Greek and Roman Biography and Mythology, 3 vols., 18.00, Little.

Fairbanks, A. Greek Religion, 1.50, A. B. C.

*Fowler, W. W. Roman Festivals, 1.20, Macmillan.

*Frazer, T. G. The Golden Bough: A Study in Comparative Religion, 2 vols., 5.00, Macmillan.

*Gardiner, E. N. Greek Athletic Sports and Festivals, 2.50, Macmillan.

III. Antiquities.

a. General.

*Gow, James. A Companion to School Classics, 1.75, Macmillan.

*Guhl & Koner. The Life of the Greeks and Romans, 2.50, Scribner.

*Harper's Classical Dictionary, edited by H. T. Peck, 6.00, A. B. C.

Hill, G. F. Handbook of Greek and Roman Coins, 2.25, Macmillan.

*Schreiber, T. Atlas of Classical Antiquities, 6.50, Macmillan.

*Smith, Wm. Dictionary of Greek and Roman Antiquities, 4.25, A. B. C.

b. Roman.

Abbott, F. F. The Common People of Ancient Rome, 1.50, Scribner.

Becker, W. A. Gallus: or Roman Scenes in the Time of Augustus, 1.25, Longmans.

*Church, A. J. Roman Life in the Days of Cicero, .50, Macmillan.

Davis, W. S. The Influence of Wealth on Imperial Rome, 2.00, Macmillan.

Dill, Samuel. Roman Society from Nero to Marcus Aurelius, 2.50, Macmillan.

Dill, Samuel. Roman Society in the Last Century of Western Europe, 1.75, Macmillan.

D'Ooge, M. L. The Acropolis of Athens, 4.00, Macmillan.

Drever, J. Greek Education, .60, Cambridge.

Fowler, W. W. Social Life at Rome in the Age of Cicero, 2.25, Macmillan.

Friedländer, L. Roman Life and Manners Under the Early Empire, 2 vols., 1.50 each, Dutton.
Friedländer, L. Town Life in Ancient Italy. Translated by W. W. Waters, .75, Sanborn.
Gusman, P. Pompeii: The City, its Life and Art, illustrated, 12.50, Dodd.
Hare, A. J. C. Walks in Rome, 2 vols., 2.50, Macmillan.
Herbermann, C. G. Business Life in Ancient Rome, .30, A. B. C.
*Huelsen, C. The Roman Forum. Translated by J. B. Carter, 1.75, Stechert.
Inge, W. R. Society in Rome under the Caesars, 1.25, Scribner.
Johnston, H. W. The Private Life of the Romans, 1.50, Scott.
Lanciani, R. Ancient Rome in the Light of Recent Discoveries, 6.00, Houghton.
Lanciani, R. The Destruction of Ancient Rome, 1.50, Macmillan.
Lanciani, R. Ruins and Excavations of Ancient Rome, 4.00, Houghton.
Mau & Kelsey. Pompeii: Its Life and Art, 6.00. Abridged, 2.50, Macmillan.
Pellison, M. Roman Life in Pliny's Time, 1.00, Jacobs.
Platner, S. B. Topography and Monuments of Ancient Rome, 3.00, A. B. C.
*Preston & Dodge. The Private Life of the Romans, 1.05, Sanborn.
Sandys, J. E. A Companion to Latin Studies, 6.00, Putnam.
Thomas, E. Roman Life under the Caesars, 1.60, Putnam.
Wilkins, A. S. Roman Education, .50, Cambridge.

c. Greek.

Baikie, J. The Sea Kings of Crete, 2.00, Macmillan.
Becker, W. A. Charicles: Or Illustrations of the Private Life of the Ancient Greeks, 1.25, Longmans.
Davidson, T. The Education of the Greek People and Its Influence, 1.50, Appleton.
*Davis, W. S. A Day in Old Athens, 1.25, A. & B.
Fowler & Wheeler. A Handbook of Greek Archaeology, 2.00, A. B. C.
Gulick, C. B. The Life of the Ancient Greeks, 1.40, Singleton.
Mahaffy, J. B. Old Greek Education, .75, Harper.
*Mahaffy, J. P. Old Greek Life, .35, A. B. C.
Mahaffy, J. P. Rambles and Studies in Greece, 1.50, Macmillan.
*Tucker, T. G. Life in Ancient Athens, 1.25, Macmillan.
Whibley, L. A Companion to Greek Studies, 6.00, Cambridge.

d. Geographical.

*Kiepert, H. Atlas Antiquus, 1.75, Stechert.
Murray. Small Classical Atlas, 1.35, Oxford.
Shepherd, W. R. Historical Atlas, 2.50, Holt.
Smith, Wm. Dictionary of Greek and Roman Geography, 2 vols., 12.00, Little.
*Tozer, H. F. Classical Geography, .35, A. B. C.

e. Political and Constitutional.

Fowler, W. W. City State of the Greeks and Romans, 1.00, Macmillan.

*Abbot, F. F. History and Development of Roman Political Institutions, 1.50, Ginn.
Granrud, J. E. Roman Constitutional History, 1.25, A. & B.
*Greenidge, A. H. J. Roman Public Life, 2.50, Macmillan.
Greenidge, A. H. J. Legal Procedure in Cicero's Time, 7.75, Oxford.
*Morey, W. C. Outlines of Roman Law, 1.75, Putnam.
Taylor, T. M. Constitutional and Political History of Rome, 1.87, Methuen.
Tighe, A. The Development of the Roman Constitution, .35, A. B. C.
Greenidge, A. H. J. A Handbook of Greek Constitutional History, 1.25, Macmillan.

f. Military.
Dodge, T. A. Caesar: A History of the Art of War, 2 vols., 5.00, Houghton.
*Holmes, T. R. E. Caesar's Conquest of Gaul, 7.75, Oxford.
*Judson, H. P. Caesar's Army, 1.00, Ginn.
Oehler, R. Bilderatlas zu Câsars Bűchern de Bello Gallico, 1.00, Stechert.
Trollope, A. The Commentaries of Caesar.

g. Art.
Gardner, E. A. A Handbook of Greek Sculpture, 2.50, Macmillan.
Lűbke, W. Outlines of the History of Art, 2 vols. 14.00, Dodd.
Richardson, R. B. Greek Sculpture, 1.50, A. B. C.
*Tarbell, F. B. History of Greek Art, 1.00, Macmillan.

IV. Literature and Literary Biography.

a. General.
Church, A. J. Stories from Homer, Vergil, the Greek Tragedians, Livy, Herodotus and Pliny, 1.24 each, Dodd.
Collins, W. L. Ancient Classics for English Readers, 28 vols. in 9. 6.75. The volumes may be obtained separately. Lippincott.
Moulton, R. G. The Ancient Classical Drama, 2.25, Oxford.
Myers, F. W. H. Essays Classical (contains fine essay on Virgil), 1.25, Macmillan.
Sandys, J. E. A Short History of Classical Scholarship, 9.00, Cambridge.
Sears, L. A History of Oratory, 1.50, Scott.

b. 1. Latin—Criticism.
Duff, J. W. A Literary History of Rome, 3.50, Scribner.
Comparetti, D. Vergil in the Middle Ages, 1.75, Macmillan.
*Glover, T. R. Virgil (an excellent treatment of Virgil and the Aeneid), 3.00, Longmans.
Green, J. R. Stray Studies from England and Italy (a fine chapter on Aeneas), 1.75, Harper.
Johnston, H. W. Latin Manuscripts, 2.25, Scott.
Kelsey, F. W. Topical Outline of Roman Literature, .40, A. & B.
Mackail, J. W. Latin Literature, 1.25, Scribner.
Nettleship, H. Virgil, .60, Appleton.
Nettleship, H. Lectures and Essays, (Essay on Virgil), 1.90, Oxford.

*Sellar, W. Y. Roman Poets of the Augustan Age, Virgil, 2.25, Macmillan.
Tyrrell, R. Y. Latin Poetry, 1.50, Houghton.
Woodberry, G. E. Great Writers. (Contains an admirable essay on Virgil), 1.20, Doubleday.

b. 2. Latin—Texts and Translations.

Marcus Aurelius, Meditations, translated by G. Long, .75, Burt.
Cicero. Two Essays on Old Age and Friendship, translated by E. W. S. Shuckburgh, 1.00, Macmillan.
Papillon & Haigh, Virgil, Annotated text, 3.00, Oxford.
Sidgwich, A. Virgil's Aeneid with Annotations, 2.25, Cambridge.

c. 1. Greek—Criticism.

Allinson, F. G. & A. Greek Lands and Letters, 2.50, Houghton.
Arnold, M. On Translating Homer, .50, Dutton.
Barrows, S. J. The Isles and Shrines of Greece, 2.00, Little.
Fowler, H. N. A History of Ancient Greek Literature, 1.40, Appleton.
Haigh, A. E. The Attic Theatre, 3.40, Oxford.
Jebb, R. C. Greek Literature, .35, A. B. C.
Jebb, R. C. Homer: An Introduction to the Iliad and the Odyssey, 1.12, Ginn.
Jevons, F. B. A History of Greek Literature, 2.50, Scribner.
Lang, A. The World of Homer, 2.25, Longmans.
Lang, A. Tales of Troy and Greece, 1.00, Longmans.
Mahaffy, J. P. Greek Classical Literature, 4 vols., 4.50, Macmillan.
Murray, Gilbert, History of Ancient Greek Literature, 1.50, Appleton.
Richardson, R. B. Vacation Days in Greece, 2.00, Scribner.
Seymour, T. D. Life in the Homeric Age, 4.00, Macmillan.
*Wright, W. C. A Short History of Greek Literature, 1.50, A. B. C.

c. 2. Greek—Translations.

Butcher & Lang. Homer's Odyssey (prose translation), .90, Macmillan.
Lang, Leaf & Myers. Homer's Iliad (prose translation), .80, Macmillan.
*Murray, Gilbert. Euripides' Medea, Troades and Electra, 1.75, Oxford.
Lang, A. Theocritus, Bion, and Moschus, 1.00, Macmillan.
Plumptree, E. H. The Tragedies of Aeschylus, 1.00, Appleton.
Plumptree, E. H. The Tragedies of Sophocles, 1.00, Appleton.
*Way, A. S. Tragedies of Sophocles, 1.10, Macmillan.

V. History and Historical Biography.

*Botsford, C. W. A Source-book of Ancient History, 1.30, Macmillan.
Davis, W. S. Readings in Ancient History, 2 vols.; Vol. I Greece, Vol. II Rome; 1.00 each, A. & B.
*Plutarch Lives, Edited by A. H. Clough, 3 vols. Everyman's Library, .35 each, Dutton.
*Webster, H. Readings in Ancient History, 1.50, Heath.
*Beesly, H. H. The Gracchi, Marius and Sulla—Epochs Series, .90, Scribner.
*Boissier, G. Cicero and His Friends, 1.75, Putnam.

Botsford, G. W. The Story of Rome as the Greeks and Romans Tell It, .90, Macmillan.

Bury, J. B. The History of the Roman Empire, 1.50. A. B. C.

*Capes, W. W. Early Roman Empire. Epochs Series, .90, Scribner.

Church, A. J. Pictures of Roman Life and Story, 1.50, Appleton.

Church, A. J. The Story of Carthage, Story of Nations Series, 1.50, Putnam.

Ferrero, F. The Women of the Caesars, 2.00, Century.

*Forsyth, Wm. The Life of Cicero, 2.50, Scribner.

*Fowler, W. W. Julius Caesar, 1.50, Putnam.

Froude, J. H. Caesar: A Sketch, 1.50, Scribner.

Gibbon, E. The Decline and Fall of the Roman Empire, Everyman's Library, 6 vols., .35 each, Dutton.

*How, W. W. Hannibal and the War between Rome and Carthage.

*Ihne, W. Early Rome (Epochs Series), .90, Scribner.

Merivale, C. General History of Rome, 2.00, Longmans.

*Merivale, C. Roman Triumvirates, Epochs Series, .90, Scribner.

Mommsen, T. A History of Rome, Everyman's Library, 4 vols., .35 each, Dutton.

*Mommsen, T. History of the Roman Republic (abridged), 1.75, Scribner.

Morris, W. Hannibal, 1.50, Putnam.

*Monro, D. C. A Source Book of Roman History, 1.00, Heath.

Oman, C. W. C. Seven Roman Statesmen, 1.60, Longmans.

*Pelham, H. F. Outlines of Roman History, 1.75, Putnam.

Shuckburgh, E. S. Augustus, 1.50, Wessels.

*Shuckburgh, E. S. A History of Rome to Actium, 1.75, Macmillan.

*Smith, R. B. Rome and Carthage. Epochs Series. .90, Scribner.

*Strachan-Davidson. Cicero and the Fall of the Roman Republic, 1.50, Putnam.

Bury, J. B. History of Greece to the Death of Alexander, 1.90, Macmillan.

Cox, G. W. The Greeks and the Persians. Epochs Series. .90, Scribner.

Cox, G. W. The Athenian Empire. Epochs Series. .90, Scribner.

*Fling, J. M. A Source-book of Greek History, 1.00, Heath.

Grote, G. History of Greece, 12 vols. .35 each, Everyman's Library, Dutton.

Sankey, C. The Spartan and Theban Supremacies. Epochs Series. .90, Scribner.

Wheeler, B. I. Alexander the Great. 1.50, Putnam.

VI. English, Fiction, Poetry, Etc. Relating to Classical Subjects.

Byron, Lord. Childe Harold.

Chaucer, G. The Legende of Goode Women.

Church, A. J. Two Thousand Years Ago.

Davis, W. S. A Friend of Caesar: A Tale of the Fall of the Roman Republic, 1.50, Macmillan.

Davis, W. S. A Victor of Salamis: A Tale of the Days of Xerxes, Leonidas and Themistocles, 1.50, Macmillan.

Henderson, H. A. M. Diomede the Centurion. .50, Methodist Bk. Co.

Kingsley, C. Hypatia.

Landor, W. S. Pericles and Aspasia.

Lytton, Bulwer. The Last Days of Pompeii.

Macaulay, T. B. The Lays of Ancient Rome.

Morris, W. The Earthly Paradise.

Morris, W. The Life and Death of Jason.

Pater, W. Marius, the Epicurean.

Sienkiewiecz. Quo Vadis.

Shakespeare, W. Julius Caesar, Coriolanus, Troilus and Cressida.

Wallace, Lew. Ben Hur: A Tale of the Christ.

VII. Plays.

Code, Grant H. When the Fates Decree. .50, Published by the Author, Pittsburgh, Pa.

*Jones & Appleton. Perse Latin Plays, .40, Stechert.

*Miller, F. J. Two Dramatizations from Vergil, 1.00, U. of C. Press.

*Paine, Mainwairing & Ryle. Decem Fabulae. .40, Oxford.

*Paxson, Susan. Two Roman Plays, .45, Ginn.

VIII. Miscellaneous.

Baedeker, K. Central Italy and Rome, 2.25, Scribner.

Dickinson, G. L. The Greek View of Life, 1.00, Doubleday.

Meader, C. L. List of Books Recommended for a High School Classical Library, .10, Macmillan.

Sabin, F. E. The Relation of Latin to Practical Life, 1.55, Published by the Author, Madison, Wis.

Story, W. W. Roba Di Roma, 2.50, Houghton.

Zielinski, F. F. Our Debt to Antiquity, .75, Dutton.

The committee appointed by the classical section of the University of Illinois Conference to prepare a list of books for a high school classical library, submits the above minimum and maximum lists.

The whole list has been classified under the following heads: Language, mythology and religion, antiquities, literature and literary biography, history and historical biography, English fiction, poetry, etc. relating to classical subjects, plays, and miscellaneous, with necessary subdivisions. It may be interesting to know that the minimum list contains sixty-five titles and without discount will cost approximately $125.00; that the maximum list contains two hundred and ten titles and without discount will cost approximately $450.00.

Ada Stewart, Peoria High School,
Helen Corley, Pana High School,
Florence F. B. Manley, Englewood High School,
Committee.

November 19, 1915.

The full names and addresses of publishers referred to in the list are as follows:

Allyn & Bacon, 1006 S. Michigan Ave., Chicago.
American Book Co., Chicago.
D. Appleton & Co., Chicago.
Cambridge University Press, 2 W. 45th St., New York.
Dodd, Mead & Co., Fourth Avenue & 30th St., New York.
Doubleday, Page & Co., Garden City, N. Y.
E. P. Dutton & Co., 681 Fifth Ave., New York.
Ginn & Co., Chicago.
Harper & Brothers, Franklin Square, New York.
D. C. Heath & Co., 623 S. Wabash Ave., Chicago.
Houghton, Mifflin & Co., 4 Park St., Boston.
Little, Brown & Co., 34 Beacon St., Boston.
J. B. Lippincott Co., Philadelphia, Pa.
Longmans, Green & Co., Prairie Ave. and 25th St., Chicago.
The Macmillan Co., Prairie Ave. and 25th St., Chicago.
The Oxford Press, 29 W. 32nd St., New York.
G. P. Putnam's Sons, 2 W. 45th St., New York.
B. H. Sanborn & Co., Chicago.
Charles Scribner's Sons, 608 S. Dearborn St., Chicago.
Scott, Foresman & Co., 623 S. Wabash Ave., Chicago.
G. E. Stechert & Co., 151 W. 25th St., New York.

Any of the books may be obtained through A. C. McClurg & Co., Wabash Ave., Chicago, Ill.

The Section met at 2 P. M., Professor H. V. Canter presiding. The general topic of the afternoon was the direct method of teaching Latin. This was opened by Professor Lillian G. Berry, University of Indiana, with a paper entitled "Educational Measurements and the Direct Method in Teaching Latin". Professor Berry spoke as follows:

Educational Measurements and the Direct Method in Teaching Latin

Extracts

The spirit of the new Education is that of social utility. Subjects no longer are to find their excuse for being in the course in the words of the old song, "We're Here Because We're Here," but each subject must prove that it is one of the best possible things to be crowded into the few short years of the child's life spent in school.

When the high priests of Education, the educational psychologists, tell the public that nothing is to be kept in the school program because it is there, that the ideal of the school should be to waste nothing, to save time and get the best results for the effort and money, this conception of education has a business ring that is appealing. Assertions are no longer the style in educational circles. The scientific spirit of the age demands that assertions be backed up with statistics based upon the results of experiments. Quod est demonstrandum is written

after every problem of the school. Ipse dixit will no longer suffice for Latin if it is to survive the present period of pedagogical challenge and investigation.

There are some teachers of Latin who sit and wait for the tide to turn. They bemoan the passing of the educated man and console themselves with the hope that the pendulum will swing backward. They are so afflicted with classic myopia that they do not see the school efficiency expert looming large on the horizon, who declares that Latin shall no longer base its claims upon tradition, but shall lay aside its mantle of aristocratic exclusiveness and with rod and tape-line be measured as to methods and results.

Fortunately the Micawbers, who wait for something to turn up, are in the minority. The greater number of teachers of Latin supplant watchful waiting with work, and are worn to a frazzle manufacturing catapults, making Roman togas, giving Roman banquets, preparing exhibits, making dramatizations of Caesar, Cicero and Virgil to keep in style with the teacher of English, selecting lists of Latin derivatives in other subjects, studying the referendum in relation to the Catilinarian conspiracy, publishing acts diurna, making a study of the present war, going over the same old battlefields and discovering similarity of methods, and seeing the German spirit of today in Ariovistus' reply to Caesar, "if you want to fight, come on! You will find what the invincible Germans can do, who have not been under a roof for fourteen years".

All these things have played their part well with the children, but there is one more fundamental step that must be taken if Latin is to survive the present period of pedagogical unrest. Teachers of Latin must learn to substitute evidence in questions of method of teaching, for biased opinion. They must ally themselves with educational experts and make systematic measurements of results that shall become standard for the whole country.

The Direct Method is a case in point. In the war of words being waged around this old-new experiment there are few neutrals, or as Professor Nutting styles himself—non-combatants. The combatants are either very enthusiastic advocates of the method or bitter opponents. Not controversy, but, as Professor Nutting says in a recent number of the Classical Journal[1], "Success in actual practice is the only ultimate test." He further says that, "while a few American teachers are taking a large chance in introducing the Direct Method without a knowledge whether it can be carried through successfully or not, the rest are to watch the progress of the experiment with a calm and undisturbed mind". The implication is that the other fellow is to try it. To know in advance without trial whether or not it can be used successfully is about as easy as to learn to swim without going near the water. Success in actual practice can not be estimated from a few scattered attempts on the part of individuals working without a definite program, and without searching criticism, exact measurements, honest recording of facts and unbiased judgment of these facts. As Professor Knapp points out in the Classical Weekly[2], "there is need of testimony of actual experience based on sound educational principles, the testimony must come from many

[1]Classical Journal, October, 1915.
[2]Classical Weekly, April 4, 1914 (editorial).

quarters, it must come in ample volume, it must extend over some years. Pupils trained in the method must be subjected to tests, not merely by those who have trained them, but by others".

It is the purpose of this paper to plead for a scientific investigation of the method and not to discuss its history, practices or advantages. The last two can be done only by one who has used it. That we may not be in the position of all too many of its critics I shall set forth Professor Lodge's[3] statement of what the Direct Method is. It is the teaching of the language through the language in which the "appeal is to the ear, as in the case of a living language, and this appeal is to be supported by the eye". Among his tenets are the following principles: The pupil is to be given from the start only so much as he is prepared to use at once and continuously. Explanations are to be in Latin, ideas expressed in Latin, conjugations developed by action, the pupil suiting the word to the action, the declensions developed by cases used in sentences, not by paradigms.

The procedure of making the child feel and think the language as a living thing varies with different instructors. The following devices are suggested by Professor Lodge: Much oral Latin, memorizing of construction in sentences, abundant oral reading, questions and answers in Latin, the hearing and reproducing of stories, dramatizations, memorizing of poetry and prose, conversation and translation from hearing.

With this brief and imperfect statement of the method and its devices let us consider some of the objections offered against it.

One of the first and most vital objections usually made is that there are not teachers sufficiently prepared to teach Latin by this method. Pofessor Barss[1] in his report on Dr. Rouse's demonstration class at Columbia University in the summer of 1912, says that a teacher who has used the method through high school with a class will have learned a good deal of Latin. One teacher reports that in her attempt to use this method she got more real mastery over Latin than she had gotten in her high school and college courses. Hail to any method that will require better prepared Latin teachers. There is no reason why the colleges should not offer courses that will help out this deficiency. Oral Latin has been so neglected that the average student of Latin in an American school can not understand a simple, spoken Latin sentence. The students of a great university were recently charmed and delighted with an address by Professor Phelps of Yale, but mystified by his closing words, "ave et vale". They actually inquired what he meant and the few Latin students who understood, in translating for them, enjoyed their one proud moment. Even the English bishop in his prayers felt the necessity of tacking on the English translation when he quoted, "dulce et decorum est pro patria mori".

The London Times[2] in describing the Westminster Latin play deplores the custom or rather necessity of giving to each member of the audience a translation of the play. In conclusion the Times says that "a great instrument has been lost which should have continued to be, as it was in the Middle Ages, the common means of understanding and fellowship among educated men".

[1]Classical Weekly, November 16, 1912.
[2]The Nation, January 8, 1914.
[3]Teachers' College Record, March, 1915.

It is doubtful, now that the classicists' former impregnable fort—severer mental discipline afforded by the study of the Classics—has been battered if not demolished, whether the ear can continue to be regarded as such a vulgar and mean organ, particularly so since experimental psychologists[3] come to its rescue with experiments to prove that auditory perceptions are superior to visual ones. Utter inability to think and express ones self in a language, to which we have devoted a life of study, can hardly be counted among our honorable points of ignorance.

With schoolmaster's glee in detecting an error, critics are wont to exhibit some mistakes, and, as Professor Nutting[4] politely calls them, infelicities, to be found in certain texts based upon the Direct Method. They charge that this Latin is a bastard which Cicero would disown. This should be made the basis of attack upon the particular author's Latinity, not upon the method. .Almost all teachers of Latin who have made a study of the cause of the high death rate among Caesar students have come to the conclusion that Caesar should be preceded by some easy graded lessons, which, since Latin literature does not offer suitable examples, must be made to suit the needs of the students. If this made-Latin deals with things of human interest, conversation, plays, stories, it will run the same risk as does the made-Latin used in the Direct Method. Several books for beginners, which are not based on the Direct Method, contain made-Latin which is not beyond reproach.

A second objection that is offered is that of the time element. While conceding the success of the method in some places on the continent and in Dr. Rouse's school, it has been the custom to say that our problem is very different because children there begin Latin at the age of ten or twelve while children in America usually begin several years later. Such a statement shows ignorance of the present trend in education and the lack of vision to profit by the change that is coming over our school system. The establishment of the Junior High School has made our problem essentially the same. The junior high school is becoming an established instiution all over this country. The study of wastes in our schools has resulted in greater efficiency in the grades, in less duplication, in the elimination or postponement until the students are more mature of many things that used to be a traditional part of the seventh and the eighth grade work. Students of school administration are urging that the first two years of this new junior high school shall not be the time-honored work of the upper grades, but, since so many children never go to high school, that the work be broad enough that the student may have a chance to find himself vocationally and educationally. In this passing or postponement of cube root, progression, unreal fractions, formal grammar, many phases of geography of no social utility, there is left alongside the vocational work a niche just for the languages, which few would deny can be more easily learned at an early age.

Professor Judd, Dean of the School of Education of the University of Chicago, commenting[1] on the pressure that Latin is beginning to feel in compe-

[3]Kensies, Zietgeist für pädagog. Psychol., II, III, 1900-1901.
Henmon, The Relation Between Modes of Presentation and Retention. The Psychological Review, March, 1912.
[4]Classical Journal, October, 1910.
[1]School Review, January, 1913.

tition with the modern languages, after apologizing for venturing upon the sacred soil of the Classics, suggests that "some one have the temerity to suggest to these one-time autocrats of the high school course that Latin be begun earlier". It is not every day that the Classics have schools of education as their allies. It would be the part of wisdom not to scorn the proffered alliance. Teachers of Latin should seize this golden opportunity offered in the recognization of our school system. School officials will need little demonstration in proof of the suitability of the grades for foreign language. Much of the opposition to Latin in the grades has come from high school teachers of Latin. If they have honest doubts they should lay their snobbery aside by giving Latin in the grades a fair chance. This invasion and capture of the ager barbaricus offers a rare chance of extending the Roman pomerium by exposing many more children to Latin. But what has Latin in the grades to do with the Direct Method? All critics of the method agree that because of its auditory, vocal and motor features that it makes its appeal to young children. If this is a nursery method suitable for young children, in the grades is preeminently the place where it can be given a fair trial.

An examination of methods employed by teachers of German shows that in their grade work they are employing the Direct Method almost exclusively. Those who have been observing Latin in the grades report that the children make it a part of themselves, and that they love and use it. A careful study of the articles[1] which have appeared in various periodicals concerning these grade classes, and letters from the schools in our own state where this experiment is meeting with success, shows the teachers are already using to a greater or less extent the important oral features of the Direct Method. Instead of declaring a priori that Latin can not be used as the basis of instruction, that forms are not best learned inductively by use, Latin teachers can show that they have the scientific attitude which measures and records results and publishes them. This is a rare chance to put to the test whether two years of letting Latin soak in when the children are most responsive to objective stimuli, gives better results than does grammatical study. Recently when I heard a class of seventh grade infants using freely and understandingly in their conversation in class room indirect discourse, I felt that the terrors of Caesar's indirect discourse would not impel them to join the cavalry forces, or to desert the Gallic War.

In estimating the results of this experiment in the grades, book knowledge of Latin is not the only thing to be considered. It is important to measure the child's ability to read a new piece of Latin, his vocabulary, whether he has at his command a stock of words that will save frequent excursions to the dictionary, (as it is the student looks up every other word in Caesar) whether his forms and constructions are in his back-bone or only remembered as belonging on such and such a page; whether his Latin is of any use in other subjects; whether he has come into such vital contact with Roman civilization that his two years are worth while, even if he should never go on. The most

[1]Classical Journal, June, 1914.
Classical Weekly, March 21, 1914.
Classical Weekly, February 13, 1914.
Classical Weekly, February 28, 1915.

important test for the future of Latin is whether there has been developed a taste which will impel the student to desire to drink deep of the Pierian spring. Parallel courses, some taught by the traditional method, others by the Direct Method, will give an opportunity of comparing the relative merits of the two methods as to the above mentioned points.

Another thing to be taken into consideration is the effect upon school authorities, for it is they who make the course of study. Reports from teachers who are attempting (the word is used advisedly) the Direct Method are to the effect that it appeals to their superintendents and principals more than does the grammar-translation-method. In the first place because it involves a minimum of home work, it fits into the present idea of supervised study with little work at home. It also fits into the modern idea of expression, of doing things instead of talking about them. Then, too, as far as our American schools are concerned it is an inovation and school men do love to start something new. Then, too, it smacks of the practical and today we worship the useful. If Latin appears at the door of the new Junior High School asking admission her chances of a cordial reception will be better if she wears a new dress.

In the establishment of the junior high school the psychological moment has come to test fully in this legitimate field the merits of this method. This means to lay aside tradition and prejudice and substitute evidence for opinion. It is you teachers of Latin who should inaugurate and manage a campaign, not only to try Latin in the grades, but to discover by practice the best method of teaching it there. It rests with you whether Latin shall have a chance with German in this change which is bound to come. Vobis faciendum.

There is no longer any excuse for a misunderstanding of the method. Many books[1] and articles[2] in periodical are being published which sets forth its history, purpose, manner of presentation, and the results being attained. Superficial critics often argue against it from false assumptions. One of these is that its ultimate purpose is to teach the students to speak Latin. Nothing is further from the truth. The purpose of the many teachers who used it so successfully ages ago, and the few who are trying it now is to teach Latin and all that Latin stands for, through the language itself. That Andrew makes the statement in his Praeceptor that the purpose of studying Latin is to learn to speak it, is no reason why you should adopt his view. Those who are the first advocates of a method do not have a monopoly on all ideas concerning it. Professor Barss thought that Dr. Rouse could have saved time by an occasional use of English in explanation. Observers of Dr. Chickering's class at Teachers' College last stummer make the same criticism. If you find that you can

[1]Some Practical Suggestions on the Direct Method of Teaching Latin—Appleton (Heffer and Sons).
Beginners' Latin—Chickering and Hoadley (Scribner).
Primus Annus—Paine and Mainwaring (Oxford Press).
Puer Romanus—Appleton and Jones (Oxford Press).
Decem Fabulae—Paine (Oxford Press).
Praeceptor—Andrew (Oxford Press).
Perse Latin Plays—Jones and Appleton (Heffer and Sons).
Pons Tironum—Appleton and Jones (Bell and Sons).
Olim—Ryle (Bell and Sons).
Tusculanae Fabulae—Avellanus.

[2]See various articles in the Classical Weekly during the year 1912-1913.

teach the word *puto* more quickly by giving the English equivalent, that is no reason for objecting to the Direct Method in toto. If you do not agree with Dr. Rouse that the atmosphere should be always Roman, no law prevents you from having your students describe in Latin an automobile race instead of a chariot race. If it seems foolish to you to treat the subject of grammar as an Eleusinian mystery, make use of all the grammatical knowledge that the child has and add more. A wise teacher will vary his method to suit conditions. An unwise one will quibble over the word "direct", forgetful that a house divided against itself is bound to fall.

....

(Omitted results obtained from the answers received from 625 first year high school students in response to a questionnaire the purpose of which was to ascertain the impression which the children had of Latin which caused them to select or reject it when they entered high school).

The detailed results there is no need to give here. From the great majority of their answers, one thing is most apparent. The crying need of the hour is to root out utterly the idea that Latin is a *dead* language, and to fit it into the present educational system in such a way that it is felt as a living language.

....

(Omitted reports from teachers where the Direct Method is being tried).

In general the attitude of school authorities is inquiring rather than antagonistic, their criticism friendly rather than destructive.

All the reports are unanimous as to the value of the method in arousing and sustaining the children's interest. The attitude of the teachers is not very encouraging. To the greater number the Direct Method is a Dr. Fell—

"I do not love thee, Dr. Fell
The reason why, I can not tell".

One has only to read between the lines to see the real reason for their objection, that they do not feel adequately prepared to teach by this method.

This is not intended as an argument in favor of the Direct Method, merely a record of some experiences which are intended to inspire teachers of Latin with the spirit of the age, which is that of scientific investigation and not of mere assertions. Instead of depending upon the statements of a few individuals would it not be better to select a committee of competent teachers who shall agree upon a modus operandi, make a trial of the method during the entire high school period of a set of students and give their results to the public? It may be that the results will prove that the Direct Method is a timewaster, it may be found to be a panacea for all our Latin ills, or it may be that a modified direct method will be found much better. At present there is not sufficient evidence to make definite assertions. Educational experts[1] will gladly help in making measurements that will afford a scientific basis for conviction.

Professor Yocum of the University of Pennsylvania in vol. VII, pp. 108-110 of the Classical Weekly suggests different experiments which the trained

[1]Yocum. Research Planned to Determine the Most Effective Factors.

investigator and expert Latin teacher can together work out. Among these are tests on the association of the foreign word directly with the activity vs. the association directly with the English equivalent; persistent use of correct form without grammatical reason vs. repetition with reason; association of names of things with corresponding object or picture plus oral expression or plus oral, visual and written vs. the same form of repetition without object or picture. All of these experiments will help solve the question of the efficacy of the Direct Method.

Aside from the results obtained, the mere making of such an experiment is of value. Teachers feel that their work is being watched and are urged on to do their best, superintendents and principals begin to be interested and children feel an added respect for their work. This is the day of publicity campaigns. Abe Martin's Primer calls attention to the fact that "nothing seems to succeed these days without a noise". Even if we do not agree with that father of school teachers, Comenius, as to the efficacy of the method, we cannot dismiss the subject without a hearing for several reasons. Advocates of the new education are abroad in the land who feel that Latin is out of place in the twentieth century so full of new and useful things; the age calls for results and certainly the results of Latin teaching in the past have not been soul-satisfying. The future demands that better results be obtained and with less tribulation and fewer tears; German instructors to satisfy the rampant practical spirit are turning to the Direct Method, and, some teachers are having great success in its use. Lastly, the reorganization of the school courses with the junior high school gives an opportunity to try it without disturbing the established order of things. Before teachers of Latin condemn it they should make use of the good old Roman principle of referendum, and give it a fair trial—an appeal to the people.

Professor Berry's paper was followed by a demonstration lesson in the teaching of Latin by the direct method. This was conducted by Miss Theodora E. Wye, Teachers' College, New York. The class consisted of 20 boys and girls from the 8th grade of the Champaign Schools. They had never studied Latin.

Miss Wye's object was to secure recognition of familiar objects by their Latin names and with as little use of English as possible. For instance, holding up a piece of chalk, she said "Quid est hoc"? and repeated the question several times until it was clear to all that she wished to know what she was holding before them. Then she said "Haec est creta". Then again "Quid est hoc", and again "Haec est creta; and this repeated many times. Turning to the door, she said "Quid est hoc", and then "Haec est ianua", and this repeated many

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Involved in the Teaching of Ancient Languages—Classical Weekly, January 31, 1914.

times. By the conclusion of the demonstration she had the class repeating in concert correct answers, in Latin, to questions as to the following objects—chalk, window, chair, door, teacher, pupils and some others. Also she taught a number of verbs, beginning with ambulo. The demonstration lesson was about 45 minutes in length and during that time, Miss Wye held the class keyed to a high degree of interest.

At the conclusion of the demonstration, Miss Wye invited questions and many were asked. "Was not the method slow"? "Yes", she answered, "at first". "Could she teach abstract ideas"? "Yes, it could easily be done". "How did she impress forms"? "By a review when they had been taken up". "Was there to be much study at home"? "Little as compared with the present method". This she considered again. Among the advantages she claimed was a very large increase in interest because it was evident that Latin was a living language in the sense that it could be used for the expression of the common business and ordinary needs of every day life. The student was thereby impressed with the thought that he was securing something; he thereby was impressed with a sense that he was mastering something. This, she claimed, was a principle of teaching of the very first importance.

Many asked whether there were teachers who could do this work with success? To this Miss Wye answered that many would fail at first but that the charm of the work was so great that it would carry most through to success. Miss Wye claimed that for practical purposes, in after life, the conversations in Latin had as much value as those in French or German because to most students of modern languages, there is no opportunity to use them after student days. She claimed also that the time was now most opportune for the introduction of the method because of the coming of the Junior High School and that from the very nature of the case, there must be some modification of the old method as teachers undertake the instruction of younger students.

At the conclusion of the discussion, the Section adjourned.

Harriet L. Bouldin, Secretary.

Commercial Section

About forty members of the section were present when the meeting was called to order at 9:15 a. m. by Mr. A. L. Loring, the Chairman of the Executive Committee. As the meeting progressed other teachers came in. After the reading of some announcements regarding the order of the day's business, the first paper was read by Miss Elizabeth Arthur, of Joliet Township High School. Her topic was "What Commercial Arithmetic Shall Include and Why"?

What Commercal Arithmetic Should Include and Why

By Elizabeth C. Arthur

I shall be very much interested in hearing what this meeting decides on the question, "What Commercial Arithmetic *shall* include and why," but I have chosen to keep my topic as it was originally given to me, "What I think Commercial Arithmetic *should* include and why," and I put the why first. Why, to begin with, a course in Commercial Arithmetic? Why ask every pupil in the Commercial department to spend a year's time on arithmetic? He has already devoted some six or seven years to the subject. Is it because of the time spent in this course he will be better prepared to enter the business world that because of it he will be more efficient in whatever of the hundred and one lines open to him, he chooses to enter? Must he therefore be taught all that there is to know about every phase of business life? We *couldn't* do that if we *would*—and yet some of our courses in Commercial Arithmetic look as if that very thing were being tried.

Mr. H. H. Hering of South Division High School, Milwaukee, recently sent out to one hundred men of almost as many occupations and professions a list of the twenty-six subjects commonly included in an arithmetic course, and asked each one to arrange these subjects in order of their practical importance to him. His list made from their replies was as follows: [copy wanting].

One cannot help but wonder where the list would have ended if he had asked each man to put into it *only* the subjects that had been of actual value to him.

The business man ought to be an authority on this subject and here are some of his remarks on "The High School Graduate and His Arithmetic," "Less fairy tale arithmetic and more Common Sense Problems," "The High School Graduate Does Not Lack for Variety and Scope of Arithmetic to be Had, but for Sufficient Drill and Accuracy in the Every Day Elements," "Too Much Time is Put on Branches of Arithmetic That the High School Student Never has Occasion to Use in Later Life," "Better Eliminate Some of the Frills and Spend That Time in Acquiring a More Thorough Knowledge of Basic Principles," "It is Really Astounding to see how Wretchedly Young People Figure When Entering Upon Business Careers; They do not use Their Heads: Common Sense Alone Would Tell Them They are Wrong," "Lack of Responsibility, Utter Indifference to Results, Careless Slip-shod Work—these Mark the Average High School Graduate."

Such remarks seem to me sufficient reason for making our course in Arithmetic as short and simple as possible and expecting and insisting that every pupil master it thoroughly. These seem to me reasons enough for including in the course only fundamental operations—addition, subtraction, multiplication, and division—but above all, addition—fractions, common and decimal, and percentage—that for a whole year's course, two periods a day, every day in the school year. Such a course means "practice and then more practice," hours and hours, days and days of drill, and then more drill. That does not necessarily mean days and hours of wearying, deadening going over of the same old thing in the same old way. Younger pupils like games, matches, contests of all kinds, and from them gain not only the practice on fundamentals but a spirit of fair play and honest rivalry which is valuable in any business. Drill in adding includes *reading* the sums of groups of numbers, especially of the forty-five fundamental combinations and easily added groups—two column addition and horizontal addition. Both addition and subtraction emphasizes the fact that mental work is from left to right—hundreds, tens, units—not units first. Division and multiplication include short cuts, but only a few and these worked out by the class itself, and used so often that they really are shorter for the pupil than the old way. Drill on the fundamentals cannot stop until the habit of knowing one's work is right is acquired, until neatness, accuracy, and speed are a part of each pupil's nature.

The battle cry of present day education is "practical courses" and practical courses the educational world surely needs, but is it practical to try to teach Freshmen in High School all of the things they will need to know when they are in the business world? If it were possible in a year's time to teach boys and girls of thirteen to sixteen years of age all of the varying phases of business Arithmetic, not one in a hundred would remember the special thing he needs to know until the time that he needs it. But it is *not* possible to teach in a year all of even one kind of business and I believe that the attempt to teach twenty-six kinds in a high school course has resulted in the slip-shod, careless, inaccurate work so severely and so justly censored in our High School graduates. If, on the other hand, our course is short and simple so that the pupil can master and can feel that he has mastered each step before he goes to the next one, this feeling of security, of work well done—perfectly done—will, unconscious though he may be of the fact, make him dissatisfied with work of any other kind. It is our business to get the pupil into right habits of thought and action which— whether he wills it or not—will stay with him. It takes time to form habits, or, as is so often the necessity in High School arithmetic to "unform" habits already formed. Merely getting a class out of the habit of reading twelve hundred forty-eight, one thousand, two hundred and forty-eight means an expenditure of time and energy. The course that is to make fundamental operations automatic and right thinking and reasoning with numbers a part of a pupil's nature, cannot include many subjects. But if after such a course we have High School graduates who do not do slip-shod work, whose common sense, trained to use, tells them when a result is wrong; whose drill on accuracy has accustomed them to having results right; if, after such a course we have graduates whose business attitude is right, who can follow directions as they are given, who are familiar with numbers and can

write them legibly, accurately and quickly—in a word, if the product of such a course is the kind of assistant the business man wants, who is there to say that the course is not practical.

In "How to Teach Arithmetic" by Brown and Coffman, the authors contend that mental arithmetic is a "misnomer", that all arithmetic is mental and what we call mental arithmetic is really oral arithmetic. The objection to that might be that oral means by word of mouth and only to explain to another or to find out another's mistakes do we do our thinking out loud. But *terms* are not important and the ability to get along without a pencil is surely not to be undervalued. Not a one of us but must figure without pencil many times a day and the man who cannot do his calculating without paper and pencil is often embarrassed before his associates, misjudged as to education, and beaten in the business world. A merchant was chuckling the other day over a customer who had gone away so well satisfied with a "bargain" he had made. He had refused to buy goods listed at $4.50, $5,00, $6.00 and $8.00 respectively at a discount of 60% but had offered $3.00 apiece. And the merchant was equally happy since his ability to figure without a pencil had saved him $2.40 on each lot of four.

So important does this ability seem and so firmly rooted in all High School Freshmen the habit of using a pencil on all occasions, that almost all work in "Percentage and its Applications"—the second semester of Commercial Arithmetic—may be done mentally. We need only enough written work to get the pupil in the habit of picking out of a problem the work that can be done without a pencil and of using a pencil only when necessary. Percentage is a broad subject. Its application includes many commercial subjects. Harking back to the theory that we teach only what the pupil can inculcate and make his own for future use, we shall have to omit some of these subjects—important though they be. Their loss, however, will not be felt if in their place our classes acquire a knowledge which never wavers of what per cent means, a habit of thinking always in regard to a rate, of what is it a per cent? and thorough practice in finding rates along familiar lines. Here is the place to teach logical procedure, clear thinking and right reasoning; and no one can proceed logically, think clearly and reason rightly on a subject he does not understand. A text book contains forty problems in insurance. Say to the class, "Work these forty problems", and what confronts them? Nothing new in the way of arithmetic probably, but term after term whose meaning they do not know—policy, premium, underwriter, long rate, short rate, and so on. These make the problems seem strange and hard and what we call a poor lesson results. Talk over with the class the subject of insurance, let each one in the class contribute his share and see that every one knows the meaning of every term. Then the problems are seen as actual conditions and the pupils have learned what ought to be done under those conditions. When a pupil has sensed the conditions and has decided what would be done under those conditions he has "solved a problem" and if it is one problem actually worked out for himself instead of forty worked out by a rule or copied from his neighbor, shall we say he has received one fortieth as much preparation for business life or forty times as much?

Such, I believe, is the kind of course we need in Commercial Arithmetic—a course short enough to be thoroughly mastered, a course including drill on the

fundamentals, practice on business fractions, clear reasoning on the practical applications of percentage. Such a course I have faith to believe, will help to send into the business world clear headed boys and girls ready to do well their part of the world's work.

A considerable discussion followed, led by Mr. A. R. Williams, of the Illinois State Normal University. A number of teachers participated in the discussion, including Miss Van Der Veen, of Joliet; Mr. Boyer, of Chicago Heights; Mr. Larson, of Oak Park; Mr. Martin, of Peoria Manual High School; Mr. Pelton, of Evanston; Mr. Finney, of Cicero, and others.

Mr. H. A. Finney followed with the reading of a paper on the subject "Commercial Arithmetic—the Introductory Course". He distributed copies of his contentions among the teachers present and interspersed the reading of his paper with arguments supporting his points.

Commercial Arithmetic—The Introductory Course

H. A. Finney

J. Sterling Morton Township High School

Some of the suggestions made in this paper are rather revolutionary; in order to encourage a general expression of opinion, so that we may arrive if possible at some definite conclusions, I shall present these suggestions in the form of a series of propositions.

Proposition 1. Commercial Arithmetic should be taught in the ninth (Freshman) school year.

Pupils who can remain in school one year or less will obtain more benefit from a year of arithmetic than from a year of bookkeeping. Such immature workers will not be instrusted with the care of double-entry books; if they obtain clerical employment it will be of a unit, routine nature where their employers will desire facility in arithmetic rather than a knowledge of the theory of debit and credit.

Pupils who remain in school and undertake the study of bookkeeping will be required to apply many arithmetical processes. Bookkeeping should therefore be preceded by arithemetic.

Those who place commercial arithmetic in the Junior and Senior year do so because they believe that the problem material is too difficult for Freshman pupils. In some of the subsequent propositions I shall suggest revisions which will make the subject better suited to the Freshman pupil, and at the same time more efficient in serving its true purpose.

Proposition 2. The purpose of commercial arithmetic is four-fold:

a. It should equip the pupil with a thorough knowledge of the processes commonly applied in business.

b. It should develop the ability to apply these processes with facility.

c. It should develop a high degree of accuracy in all useful processes.

d. It should train the pupil in the art of presenting statistics in a neat, attractive, and business-like manner.

One should clearly distinguish between the function of commercial arithmetic and the function of all other high school mathematics. The primary purpose of algebra and geometry is the development of reason; their practical applications are secondary and remote. But the primary purpose of commercial arithmetic is direct and utilitarian. It aims to make pupils masters of an economic tool. The development of the reason is only a secondary object.

Proposition 3. Most commercial arithmetic classes are failing to fulfil these functions.

The complaint of business men that children cannot add is only one evidence of the fact that pupils, after a semester's work or a year's work in commercial arithmetic, have not mastered this economic tool. They do not possess an unhesitating knowledge of principles, they are neither accurate nor rapid workers, and they have slight skill in presenting their results in attractive form.

Proposition 4. This failure is due not so much to inefficient teaching, as to the fact that the subject matter and the problem material of the course are poorly adapted to promote mastery of principles, and to develop speed, accuracy, and neatness of execution.

The *subject matter* of high school commercial arithmetic has been adopted bodily from the arithmetic of the grades, without sufficiently considering the difference between the purpose of grade arithmetic and the purpose of high school commercial arithmetic. The emphasis still is placed on arithmetic rather than on commerce. The same topics are treated in the same manner and in the same order. Many topics which have little relation to business have hung over into the commercial arithmetic course; and many topics which are too technically commercial for the grades should be incorporated in the course, but have not been.

The *problems* adhere to the form used in the grades. Ten miscellaneous problems form the conventional assignment. Perhaps two of these problems apply processes which are actually applied in business, while the remaining eight are inverse processes and mental gymnastics. These eight inverse problems, perhaps furnishing mental exercise, distract the pupil's attention from the true business processes, confuse him, and are responsible for his halting knowledge of processes; while the two practical problems do not afford sufficient drill to develop accuracy and speed.

Proposition 5. It is imperative that the subject matter and the problem material of the course be revised and enriched.

Since the course aims to promote mastery of principle, combined with speed, accuracy and neatness of execution, and since the subject matter and the problems are responsible for the failure in accomplishing these ends, it seems to follow that the subject matter and the problems should be revised. The remaining propositions suggest lines of revision.

Proposition 6. Since all arithmetical calculations are based on a few fundamental processes, the first semester may well be devoted to acquiring speed and accuracy in addition, subtraction, multiplication, division, fractions, percentage, and short methods.

We are inclined to assume that pupils come to us from the grades with a working knowledge of processes usually taught before the subject of percentage. We hesitate to carry these pupils through a review of the subjects, and we are inclined to begin with the applications of percentage. But before adopting this plan as a fixed policy, it would be well to give incoming Freshmen a test to measure their efficiency in the fundamental processes. Such tests usually disclose a surprising inefficiency.

Proposition 7. Nothing should be included in the course which cannot meet the test of business utility. The problems should involve only those processes which the pupil will use in some future business activity. Inverse processes and mental gymnastics should be eliminated because they are out of harmony with the direct, utilitarian purpose of the course.

This proposition can be illustrated in the subject of Fire Insurance. The following problem is typical of the inverse processes which are never applied in business, but which form a large proportion of the problem material of our course:

> A insured his house for ¾ of its value, and his barn for ⅔ of its value. The rate on the house was 1½ times the rate on the barn. The total premium was $18.50. What was the value of the barn?

The following are the principles of fire insurance which are actually applied in business, and which should be taught in the school. These should be the basis of the problems:

a. Elements of risk which determine the premium rate.

b. Computing the premium when the insured value and the rate are known.

c. Computing the value of the unexpired premium to be carried forward on the balance sheet as a deferred charge or prepaid expense.

d. Methods of making settlement in case of a loss.

e. Computing the premium rebate allowed the insured when the policy is canceled by

1. the insured
2. the underwriter.

Proposition 8. Certain topics now included in the course should be omitted.

Many subjects in the commercial arithmetic course have a very limited business application, but they have hung over into the course because the force of inertia operated powerfully when eighth grade arithmetics were revised into commercial arithmetics. Among those topics which might be discontinued because of their limited use, are: the greater portion of so-called practical measurements, including plastering, paper-hanging, carpeting, roofing, paving, etc.

Proposition 9. New topics should be introduced to bring the subject into harmony with the modern applications of arithmetic in business.

The following topics are suggested:

a. The art of presenting statistics graphically.

b. Various methods of making wage payments, including those devised by efficiency engineers:

Day rate.
Piece rate.
Differential.
Premium.
Bonus.

c. Percentage analyses of business to promote buying and selling efficiency:

Daily sales reports.
Comparison of salesmen.
Comparison of sales each day with corresponding day of previous year.
Comparison of gross profits, expenses, and net profits by departments.
Ratio of returned goods to sales in each department.
Per cent of goods purchased from various manufacturers sold during the month
Comparison of deliveries made on various routes.

d. Advertising.

e. Income tax.

f. Parcel post.

g. Depreciation.

h. Operation of the clearing house.

i. Nature of buying expense and its relation to cost.

j. Nature of selling expense and its relation to profits.

k. Comparison of buying and selling expense in a given business, with standard per cents of buying and selling expense for efficiently managed businesses of that group.

l. Methods of computing profits in a highly organized business such as a department store where overhead expenses must be prorated among departments; where profits are determined by departments; and when the system is so specialized as to permit of computing profits on individual sales.

m. Factory cost methods, with particular attention to the processes of allocating burden to the various jobs or processes by

1. The direct labor hours method.
2. The direct labor cost method.
3. The materials cost method.
4. The prime cost method.
5. The various machine rate methods.

Proposition 10. Commercial arithmetic is a difficult subject because of the pupil's limited business experience; therefore each topic should be introduced by a thorough discussion of the business activity related to the arithmetical process.

Proposition 11. A business sequence rather than an arithmetical sequence should be followed. Those topics should be grouped in which there is a relation of business experience rather than a similarity of mathematical processes.

This proposition can best be illustrated by organizing certain topics in parallel columns according to an arithmetic sequence and according to a business sequence.

Arithmetical Sequence	Business Sequence
Grouping and subjects involving similar processes of arithmetic.	Grouping topics involving a similar or continuous business experience.
Percentage and its Applications:	
Cash and Trade Discount	Cash and Trade Discount: Taught as part of the general subject of buying and selling merchandise.
Commission	Commission: Taught as one of a number of related methods of determining payment for services.
Profit and Loss	Profit and Loss: Taught after the pupil has been led through the experiences of buying and selling goods and taking inventory; experiences which necessarily precede the computation of profit and loss.
Brokerage	Brokerage: Taught after the pupil has been taken through the experience of organizing a corporation, issuing stock, and floating a bond issue.

Proposition 12. Neatness, accuracy, and speed should be promoted by concentration on the fundamental business processes, and by frequent preparation of ruled forms on which results are recorded.

ILLUSTRATION OF A RULED FORM
COMPUTING INTEREST

	$845.00	$632.00	$1,296.00	$5,483.00	$74.60	$143.40	$746.95	$25.00	$130.00
39 days.......	5.49	4.11	8.42	35.64	.48	.93	4.86	.16	.85
66 days.......	9.30	6.95	14.26	60.31	.82	1.58	8.22	.28	1.43
63 days.......	8.87	6.64	13.61	57.57	.78	1.51	7.84	.26	1.37
68 days.......	9.58	7.16	14.69	62.14	.85	1.63	8.47	.28	1.47
75 days.......	10.56	7.90	16.20	68.54	.93	1.79	9.34	.31	1.63
80 days.......	11.27	8.43	17.28	73.11	.99	1.91	9.96	.33	1.73
85 days.......	11.97	8.95	18.36	77.68	1.06	2.03	10.58	.35	1.84
96 days.......	13.52	10.11	20.74	87.73	1.19	2.29	11.95	.40	2.08
98 days.......	13.80	10.32	21.17	89.56	1.22	2.34	12.20	.41	2.12
45 days.......	6.34	4.74	9.72	41.12	.56	1.08	5.60	.19	.98
82 days.......	11.55	8.64	17.71	74.92	1.02	1.96	10.21	.34	1.77
28 days.......	3.94	2.95	6.05	25.59	.35	.67	3.49	.12	.61

In this exercise the pupil's attention is concentrated, during the preparation of his entire lesson, on one process of positive business utility.

There is sufficient drill to promote mastery of principle, and speed and accuracy in execution.

Ruling the blank and entering the results, afford valuable training in the art of presenting statistics in a neat, attractive and business-like manner.

Mr. A. Q. Larson then read his paper entitled, "A Year of Commercial Geography".

A Year Course in Commercial Geography

By A. Q. Larson

The study of commercial geography presents to us many possibilities and problems. Many have realized the importance of this subject in the education of the high school student, but we mark time because of the technicalities which usually stand in the way of new and undeveloped enterprises.

I shall endeavor to present a few points in favor of greater effort toward enlarging the commercial geography course in the high schools.

The press, the public library, and the moving picture are all answering a public demand for commercial and geographic information. *Review magazines* are *comparing* countries from the standpoint of their economic resources. *Moving pictures* show us the location and methods of industries, and the *possibilities* of development in different fields. Men's clubs and women's clubs call for speakers and reports by club members, the content of which is commercial and geographic information. Libraries are meeting this call with *economic* studies of countries. Our local business men are working toward a grasp of the *larger relations* in commerce. Society is trying to expand its ideas to *match the rapid economic* growth and bring some *order* and *method* in thought concerning our possibilities and problems.

The conceptions brought out by this study are important in the commercial world. We can classify business men according to their geographical and commercial information; the retailer with his local conceptions of trade, the wholesaler and manufacturer whose ideas extend over a state or section of a country, the traffic manager and general freight agent who understand the commercial relations of several railroads, the financier and first class statesman who understand the forces back of the present trade relations over the world. Has not the business position of these men been determined in a great measure by their ability and diligence in gaining the larger conceptions of commerce and geography? But the main point for us to observe is, that *ability* and *commercial* knowledge have met only by chance. By accident and without direction some have taken up the right line of study, which has enabled them to comprehend and solve the larger problems. There has not been given to all those capable of being foremost in commercial fields proper foundation and direction for advancement. Very likely, many with ability along commercial lines have gone into blind alley occupations. A year of thorough study of commerce would be a *step* toward developing capable and well rounded business men.

Let us look for a moment at the main object of our present high school *commercial* education. The subjects emphasized are business arithmetic, bookkeeping, stenography and typewriting, which meet the demand for salable training, a training which prepares the student for the problems which arise in the corner of an office. Many consider bookkeeping the all-important study

in commercial education, but the relation of bookkeeping to business is about the same as the keeping of class records is to teaching. The daily routine of business does not generally develop in the worker a broader view point, but tends to *narrow* his outlook; it appears then, that me must *emphasize the study* of commerce.

The high school must open the way for an appreciation of the larger tendencies and purposes of trade. In the first place the high school educates the larger proportion of those who will enter business, for we know a great many do not reach the advantages of the University. We should not consider only, whether the University gives entrance credit, but expand our courses for the advantage of those who finish their education in the high school. Secondly, if commerce is to be studied in the University the student will have gained three years in observation, information, and perspective along this line.

The commercial series of studies at the present time should be something of this order. General Science and Physiology the first year, Commercial Geography the second, Commercial History the third, Economics and Commercial Law the fourth. Other practical courses may be added after these are well organized.

Commercial Geography is the part we are concerned with most at the present time. What is to be the object of this course? What sort of impression shall the study leave on the student's mind? A clear idea of the goal to be reached and the method to be pursued must be decided upon.

If we go into the business world for a moment and examine the demands of managerial positions, for instance the sales manager, general freight agent, manufacturer, wholesaler, grain dealer, bond merchant or banker, we find they each demand a knowledge of many industries, sources of raw material, climatic conditions, transportation problems, and traffic. If you observe closely you will see that the manager views his business from the outside inward, while most of workers view it from the inside outward.

Our purpose then should be, to develop a realization of the principles and causes which affect the location of industries. Second, to furnish information concerning the location and relative importance of the principal industries; third; to make the student familiar with various sources of commercial information.

The methods of carrying out the above purpose may vary. The following order and steps in method are suggested:

1. Content. The conditions affecting commerce are generally divided into three groups, namely, natural, human and economic. Each one of the factors affecting commerce should be carefully fixed in mind as fundamental propositions.

2. Method. A country is studied in the following way:

(a) A free hand outline map is drawn, marking the rivers, commercial and industrial cities, and the main transportation lines.

(b) The student prepares answers to thought provoking questions on the location of industries in this country. The questions deal with causes and principles. They serve to center the attention and discussion on the more important points. Minor points are apt to occupy too much time if the text is followed very closely.

(c) The industries in which the country leads are studied intensively at this time. For instance after a general analysis of the southern section of U. S. is completed, the following points are brought up about cotton:

1. History and Importance.
2. Fields of production over the world and relative importance of these fields.
3. Conditions under which the industry thrives.
4. Influence which may enlarge or shift the areas of production.

The above points will develop the relation of U. S. to other fields in cotton production. Lantern slides, exhibits, trips to factories, and special reports by students are the best means of bringing out the process in manufacturing.

(d) The location of transportation routes, of commercial and industrial cities, and their relation to the fields of production are the final points brought out about the country.

3. This method is carried out with all the countries of the world, with a varying degree of intensity according to their commercial and industrial importance. The order in which they are studied will vary with the teacher, but we should always be mindful that we emphasize facts according to their relative importance.

4. After the general analysis of each country and an intensive study of the chief industries therein is completed, a study of the *trade routes,* the *markets of the world* and a *comparative* study of countries is in order. Elementary points on tariff and commercial treaties may well be taken up at the close of the work.

The selection of the material to work with is very important. Government reports and reference books are used in connection with a good text. The committee will report on this today, so I will not go further on this point.

Clippings of current commercial ideas from magazines and papers are pasted in the notebooks, and a report of the content by the student, will make the study more real. The other useful aids were heretofore mentioned.

If we are to accomplish the above purpose and cover the field indicated, a year is the least time in which it can be done with completeness and any degree of thoroughness. A separate study of each of the factors of commerce, of U. S. and possessions, Canada, Mexico, Central America and the West Indies, and an intensive study of the industries in which these countries lead will require a semester. The *remaining countries must be analyzed if the proper perspective is to be attained.* A great many of the facts learned

will slip from the student's mind in a short time, but the general impression and the perspective left should be as nearly complete and well balanced as we can make it.

Such a course will result in many advantages to the novice entering business. The usual feeling of fear and uncertainty will be partly allayed by reason of the order and causal relations fixed in his mind, he will have a broad view of business from which he may safely specialize, he will have a basis for future study. Finally it will lead to the development of a group of broad-minded business men who will be able to pursue a steady domestic and foreign commercial policy, and give to *our* country the advantages of the inventions of our technical men.

Discussion of Mr. Larson's paper was postponed until the afternoon session.

The morning session was concluded with the reading of portions of the revised report of the Committee on Shorthand, Typewriting, and Commercial Arithmetic, which had held over from the previous year. The report was approved and adopted by the section.

At 2:00 p. m. the section resumed its conference. Upon suggestion the section decided to dispose of its routine business before continuing with the program.

Election of new member for the Executive Committee was next declared in order. Chairman Loring asked Mr. Boyer of Chicago Heights to take the Chair temporarily, while he addressed the section, with regard to the advisability of electing a member of the University Faculty to the Executive Committee. His reasons for advocating this were two-fold; first the University High School Visitor, Mr. Hollister, frequently called together a general meeting of the committees of all sections, in Urbana, thus with a University man on the committee, the commercial section would always be represented at such a meeting. Second, since both the University and the various teachers of this section are interested in getting to a common basis for getting University credit for Commercial work in the high school, it would be well to have a University man to co-operate with the other members of this committee, to that end.

Acting Dean Weston, of The University of Illinois School of Commerce, was chosen a member of the Executive Committee, vice Miss Van Der Veen, retired.

The section endorsed the appointment of Messrs. Pelton, Hilling, and McAllister as a committee on Reference Books in Commercial Branches in the High School Library.

It was then enacted that the Reference Book Committee be established as a permanent fixture of the section and the members be chosen in the same manner as for the Executive Committee.

The Chair announced that if there were no objections he would appoint the first committee, appointing the committeemen for one, two and three-year periods respectively.

Mr. G. M. Pelton then presented the recommendations of the Reference Book Committee.

Reference Books in the High School Commercial Department

A recent report of the United States Bureau of Education furnishes some valuable information concerning the present status of the Commercial libraries in high schools in the North Central Association. Of seven hundred and four schools reporting on the number of volumes in the high school library for commercial work, the following information was received:

	Commercial Course	*No. of Volumes*
	340	0
	305	1-50
	27	51-200
	2	201-500
	1	501-1000
	–	1001-2000
	–	2001-5000
	–	5001-and over
Total	675	
Median	0	

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The situation in Illinois seems to be somewhat better. The following table shows the per cent of units given in commercial subjects, as compared with others, based upon reports received from one hundred and twenty-two high schools:

Subjects	*Per cent of units*
English	13.3
Latin	10.7
Commercial	9.6
History	9.1
German	8.
Manual Training	5.8
Algebra	5.
Geometry	4.6

Below is given the median number of volumes of reference books used in various subjects in Illinois high schools:

Median No. Volumes in

English	281
History	232
Fiction	88
Botany	22
Latin	22
Zoology	22
Physics	19
Civics	19
German	18
Mathematics	14
Chemistry	13
Physical Geography	13
Education	8
Commercial	7

A questionnaire was recently sent out to a large number of representative high schools in the country to get some information with regard to the number of students in high schools taking commercial courses. The results showed that in some of the institutions, as many as fifty per cent of the entire high school was taking this work, and that the average was thirty-three and one-third per cent.

In the light of the above facts, and the fact that the subject matter in such courses, as Commercial English, Bookkeeping and Accounting, Commercial Law, Commercial Geography, Economics, Salesmanship and Advertising, etc. not only warrant, but make necessary the use of reference books and other material, it would seem that the time has come for additions to the present library equipment.

The lists of books given in the following subjects are suggested for such work. "*" indicates books that may be used in smaller high schools. The number of books in either case, and the number of copies of each book that should be obtained, depends upon the local requirements.

Bookkeeping and Accounting

Bentley, H. C.	Corporation Finance & Accounting	Ronold
*Bentley, H. C.	Science of Accounts	Ronold
Brown, Richard	History of Accounting & Accounts	
*Cole	Accounts, Their Construction and Interpretation	Houghton, Mifflin
Haskins, Charles W.	Essays on Accounting and Business Education	
*Hatfield, H. R.	Modern Accounting	Appleton

*Klein, J. J.	Elements of Accounting	Appleton
*Montgomery, R. H.	Auditing, Theory and Practice	Ronold
Stockwell, H. G.	Net Worth and the Balance Sheet	Ronold

Commercial Law

*Bays'	Cases in Commercial Law	Callaghan & Co.
*Williston	Commercial Law and Negotiable Instruments	American Inst. of Banking
*Spencer	Manual of Commercial Law	
	Shorthand and Typewriting	Bobbs Merrill & Co.
*Anderson, Thomas	History of Shorthand	
*Mares, G. C.	History of the Typewriter	

Commercial Geography

Allen	Industrial Studies of Europe	Ginn
*Allen	Industrial Studies of U. S.	Ginn
Burkett	Cotton	Doubleday
Butler, F. O.	Story of Paper Making	J. W. Butler Paper Co.
Carpenter, F. G.	Foods, or How the World is Fed	Amer. Book Co.
*Channing & Lansing	Story of the Great Lakes	MacMillan
*Chisholm	Handbook of Commercial Geog.	Longmans
*Bengston, N. A.	The Wheat Industry	MacMillan
Edgar, W. C.	Story of a Grain of Wheat	Appleton
Farman, S. C.	Story of Useful Inventions	Century
*Forbes, Lindsay	Panama and the Canal Today	
*Freeman, W. G.	The World's Commercial Products	Ginn
*Gregory, Keller & Bishop	Commercial Geography	Ginn
Hungerford, Edw.	Modern Railroad	McClurg
Johnson, E. R.	Elements of Transportation	Appleton
Martin, E. A.	Story of a Piece of Coal	Appleton
Mills, J. C.	Searchlights on Some American Industries	McClurg
Mills, J. C.	Our Inland Seas	McClurg
*Moore, J. R. H.	Industrial History of the American People	MacMillan
Morgan, J. O.	Field Crops of the Cotton Belt	MacMillan
Myrick	Book of Corn	Judd
*Ross, H. J. G.	Argentine and Uruguay	MacMillan
*Rutler	Wheat Growing in Canada, U. S. and the Argentine	Black
Smith, J. R.	The Ocean Carrier	Putnam

Smiths, J. R.	Story of Iron and Steel	Appleton
*Smythe, W. E.	Conquest of Arid America	MacMillan
Spears, J. R.	Story of American Merchant Marine	MacMillan
Surface, G. T.	The Story of Sugar	Appleton
*Toothaker, C. R.	Commercial Raw Materials	Ginn
Tower, W. S.	The Story of Oil	Appleton
*Van Hise	Conservation of Natural Resources in the United States	
Watt	Leather Manufacture	Van Nostrand
Wilkinson, F.	Story of the Cotton Plant	Appleton
Wing, H. H.	Milk and its Products	MacMillan

Economics

*Bullock, C. J.	Selected Readings in Economics	Ginn
*Burch and Nearing	Elements of Economics	MacMillan
Cleveland, F. A.	Funds and Their Uses	Appleton
Day, Edmund E.	Questions on the Principles of Economics	MacMillan
*Duncan, J. C.	Principles of Industrial Management	Appleton
*Ely, Richard T.	Monopolies and Trusts	
	The Labor Movement in America	
*Herrick, C.	Outlines in Economic History	MacMillan
*Sparling, S. E.	Introduction to Business Organization	
*Seager, H. R.	Economics, Briefer Course	Holt & Co.
Weld, L. D.	The Marketing of Farm Products	MacMillan

Commercial English

*Altmaier	Commercial Correspondence	MacMillan
*Buehler	Practical Exercises in English	Amer. Book Co.
*Buhlig, Rose	Commercial English	Heath
DeVinne, T. L.	Correct Composition	Century
*Doris and Lingham	Business English and Correspondence	Ginn
Gardner	Effective Business Letters	Ronold
Knight, M.	Practical Work in English	Longmans
Lewis	Business English	La Salle Extension University, Chicago
Manly and Powell	Manual for Writers	Chicago University Press
Orcutt, W. D.	The Writers' Desk Book	Stokes

General

*Carnegie, Andrew	The Empire of Business
*Bok, E.	The Young Man in Business
*Bleyer, W. G.	Newspaper Writing and Editing
*Brandeis, L. D.	Business: A Profession
Fowler, N. C.	How to Get and Keep a Job
Drysdale, W.	Helps for Ambitious Boys
Goe, D. E.	The Transaction of Business
*Higinbotha, H. N.	Making a Merchant
Hobbs, E.	How to Get a Situation
Marden, O. S.	The Young Man Entering Business
Oxley, J. M.	The Romance of Commerce
Reid, W. et. al	Careers for the Coming Men
Rose, W. G.	Success in Business
Stoddard, J. S.	What Shall I Do? Fifty Profitable Occupations
*Washington, Booker T.	Character Building
*Willard, Frances	Occupations for Women
Wilson, C. D.	Making the Most of Ourselves
*Yeats, John	Growth and Vicissitudes of Commerce in All Ages

Salesmanship and Advertising

Hall	Success in Retailing	Butler Brothers
Calkins & Holden	Modern Advertising	
*Fowler, N. C.	Practical Salesmanship (A treatise on the art of selling)	
Knox, J. S.	Salesmanship & Business Efficiency	
*Moody, W. D.	Men Who Sell Things	
*National Cash Register Co.	Ginger Talks to Salesmen	
*Neystrom, P. H.	Retail Selling and Store Management	
*Shaw Co., A. W.	Good Will, Trade Marks and Unfair Trading	
	*How to Write Advertising	
	Sales Correspondence	
	*Personal Efficiency in Business	
	Credit and Collection Methods	
	*Personal Salesmanship	
	*Developing Tact and Persuasive Power	
	The Knack of Selling (2 vol.)	
*Scott, Walter Dill	Psychology of Advertising	
*Scott, Walter Dill	Influencing Men in Business	
Taylor, H. C.	What a Salesman Should Know	

Taylor, H. C.	What An Advertiser Should Know	
Woodworth, Stanley	Success in Salesmanship	
	Business Practice and Methods	
*Meade, E. S.	Corporation Finance	Appleton
*Schulze, J. W.	The American Office: Its Organization, Management and Records	Key Pub. Co.
*Teller and Brown	Business Methods	Rand

Magazines

Printers' Ink
*System
*The American Gentleman
The Dry Goods Economist
Office Appliances
*World's Work
Business and the Bookkeeper
The Gregg Writer
Advertising and Selling
*Judicious Advertising
*Federal Trade Reporter
American Penman
The Business Philosopher
*The Business Journal

The committee has made no attempt to offer a list of federal government and state documents, which may be used to great advantage. However, a fund of information may be obtained from these sources, and at practically no cost. It is also possible to secure valuable material from trade organizations, commercial associations, and private organizations. A large number of business establishments furnish exhibits, which should be found in every Commercial department.

Respectfully submitted,

Guy M. Pelton, Chairman,
Evanston, Illinois.
David C. Hilling,
Peoria, Illinois.
H. B. McAllister,
Joliet, Illinois.
Committee on Library Lists.

Miss Van Der Veen followed with a reading of temporary syllabi in Commercial Geography, Commercial Law, and Bookkeeping.

Mr. Loring announced that he had asked Miss Van Der Veen to prepare a temporary syllabus for the consideration of the section.

Miss Van Der Veen presented a temporary syllabus for Commercial Law, Commercial Geography and Bookkeeping.

A motion to receive the report on temporary syllabi was laid on the table.

Upon motion a committee was elected to take up the preparation of permanent syllabi for eight commercial branches, and to report at the next meeting of the Conference.

The following constitutes the committee and the subjects assigned to each member:

Bookkeeping, first year—Mr. G. H. Pelton, Evanston.
Bookkeeping, second year—Mr. Scovill, Champaign.
Commercial Arithmetic—Mr. H. A. Finney, Cicero.
Commercial Geography—Mr. A. Q. Larson, Oak Park.
Commercial English—Miss Van Der Veen, Joliet.
Commercial Law—Mr. A. R. Williams, Ill. Nor. Univ.
Economics—Mr. A. L. Loring, Danville.
Shorthand and Typewriting—Mr. D. C. Hilling, Peoria.

The discussion of Mr. Larson's paper on Commercial Geography was then taken up by Prin. Boyer, of Chicago Heights. Mr. Boyer, in his inimitable way, advocated the practice of much field work in the teaching of the subject.

Many suggestions were made as to what should be the topic of discussion next year. Beside the contemplated report of the Committee on Syllabi, the section favored a further discussion of the development of courses in the high schools that would be basic to the commerce courses in the University.

County Superintendents and Village Principals Section

Superintendents and Village Principals section met in room 354, Administration Bldg. at 9 o'clock, Nov. 19th.

B. C. Moore, Chairman, being absent, the meeting was called to order by the secretary.

It was the pleasure of the section to proceed at once with the program.

Principal I. M. Allen, Springfield High School, presented a paper on "The Village High School". "Its present limitation and its immediate and future possibilities".

The paper was followed by a spirited discussion as to what defined a "good teacher".

State Supt. Blair led the discussion. He took exception to the impression that academic preparation alone guaranteed efficient teaching. Experience and teaching, and ability should have recognition in judging a teacher.

Co. Supt. Watts of Champaign, Ben. L. Smith of Peoria, contended that results obtained furnished basis for estimating teaching ability.

The second paper was presented by County Supt. Charles McIntosh of Monticello. "Is there longer reason or excuse for attempting High School work in one room Rural Schools? If not, what"?

The plan and view point met the decided approval of all present. State Supt. Blair pronounced it a splendid presentation of this problem.

The discussion that followed was entered in by a large majority of those present.

As both papers set forth definite phases of present school problems, it was deemed more helpful to submit manuscript in full.

A vacancy existing in membership of the Committee, County Supt. Ben. L. Smith was elected for a term of three years.

Meeting adjourned at 12:20; and was pronounced the most interesting and helpful conference so far held.

Is There Longer Reason or Excuse for Attempting High School Work in One-Room Rural Schools? If Not, What?

Abstract of Address by Charles McIntosh, Monticello, Ill.

In making the first general revision of our Illinois State Course of Study in 1894, the committee included an outline for two years of higher work to be done by pupils in the country and village schools. We wish to inquire at this time (1) what were the probable reasons for suggesting this work for our rural schools? (2) What effect has the teaching of this higher work in our country schools had upon the educational conditions of our state? (3) To what extent are the conditions that seemed to make the teaching of the higher work in the country schools desirable in 1894 present to-day?

In 1894, the importance of a high school education was appreciated by the educators of the state, but not fully appreciated by the great body of the people. This was because the high school was a new institution, and not many really knew what it was. The great mass of the people had never attended a high school, and didn't see the importance of having their children attend one. A few high schools had been established in urban communities, but only

one district in fifty furnished high school privileges. The high schools that were established had comparatively few non-resident pupils. The educators thought that they must take the high school out to the people and show them what it is, hence the outline of high school work for our rural schools.

The suggestion was not an unreasonable one, and many country schools could do work approximately as good as the smaller city schools, from the following reasons:

(1) The plan of alternation for work in country schools had been developed, thus decreasing greatly the number of classes.

(2) There were many small country schools. Small schools mean small classes, and this makes possible combinations, so that higher course work could be done.

(3) The country schools had almost as much equipment for high school work as the smaller cities.

(4) Few high school teachers in the smaller cities at that time were college graduates.

(5) In the smaller high schools the work was all prescribed and no choice of subjects was allowed.

The results of teaching this high school work in the country schools as shown by the experience in Piatt County are as follows:

(1) Better work in the common branches. More pupils took our final examination and did better work than before the high school work was generally introduced.

(2) A much larger percentage of our pupils did some high school work.

(3) The kind of work done was creditable.

(4) An increasingly larger percentage of pupils were enrolled in the accredited high schools of county.

(5) Better teachers for country schools.

(6) Greater interest in and sympathy with high school work.

High School Conditions to-day as compared with those in 1894:

(1) Much greater interest in high school work on part of pupils and parents than in 1894. Shown by figures collected by Dr. Bagley, and compiled by State Superintendent Blair.

(2) Much better high school advantages to-day.

a. Approximately one district in five provides high school work.
b. High school privileges extended to every pupil in the state.
c. Better transportation facilities.
    1. Interurban lines.
    2. Better roads,—automobiles.
    3. Hard roads for all seasons of year.
d. More diversified course of study,—vocational subjects offered.
e. Better prepared teachers.
f. High school life made attractive to the pupils.

Comparative advantages of taking the ninth year's work in home district and in a fully organized high school:

If work is taken in home district

(1) Child is more nearly under personal direction of parent.

(2) Driving back and forth to school means much time on roads and much exposure to the weather.

(3) Child is likely to acquire more expensive tastes and habits.

(4) There are more things to distract his attention from his studies.

(5) Is likely to be influenced away from the farm.

If work is taken in a fully organized high school

(1) The child is brought in contact with teachers of broader scholarship and culture, gains through them a broader outlook upon the world, and is therefore rendered more assistance in his efforts to "find himself".

(2) Is brought more in contact with pupils of his own age which helps him to learn "how to get along with people".

(3) Has a greater choice of subjects.

(4) Has the advantage of better instruction.

(5) Has an opportunity to develop the various sides of his nature.

Where it is possible, we should advise the pupil to attend a fully organized high school. If the choice is between getting some high school work in the country and not getting it at all, we recommend the work in the country school.

Domestic Science Section

The section was called to order by the Chairman, Miss Isabel Bevier, who welcomed the section to the conference and made some announcements.

A nominating committee consisting of Miss Marguerite Tucker of Highland Park, Chairman; Miss Helen Murphy of Decatur; and Miss Bertha Harper of Danville was appointed to nominate persons to fill the vacancies in the executive committee.

The report of the executive committee was then presented by Miss Florence Harrison and was as follows:

REPORT OF THE EXECUTIVE COMMITTEE OF THE DOMESTIC SCIENCE SECTION OF THE HIGH SCHOOL CONFERENCE, 1915

The work of the executive committee of the Domestic Science Section of the High School Conference for 1914-15 has been: first, the planning of the program for the present meeting; second, a beginning in the problem of distinguishing between fundamental and acces-

sory elements of the syllabus; and, third, a few suggestions for teaching the various subjects.

The committee met for conference in Decatur, October 23. Misses Treganza, Stone, and Harrison were present. The request that definite, concrete, practical and helpful suggestions be sent by the teachers, received little response. The experienced teacher has many suggestions which could be of value if she would feel it her duty and privilege to submit such suggestions to the committee. For example, what is the best way to teach food values, the effect of heat upon food, the composition of food, the method of cooking types of food, the form and content of the note book for the grade and high school girl, the method of conducting a laboratory lesson, a recitation lesson, the drafting of a waist, the selection of cloth for a dress might be given.

The following are some of the suggestions given:

1. Teach facts not for own sake but for their application to household tasks. Study the pupil's needs and make the subject vital. It is not a matter of how much one teaches as how much is applied or used by the pupil. Never teach to cover a course of study.

2. Plan work and adopt the best system of passing supplies so that a large amount of time and confusion are eliminated.

3. Learn to adapt recipes to conditions to save cost and waste. For example, the first class in the morning usually is not very hungry and the recipe cut in half is sufficient, while the last class would require a full recipe.

4. Put the girl on her own responsibility as much as possible. Let her plan her own work, make out a plan by which she can work and finish on time. Offer suggestions when needed.

5. Let the girl watch her own oven when baking.

6. Teach the girls to improvise things with which to work even if you have a well equipped kitchen and it is not necessary.

7. It is not a good plan to tell pupils the exact utensils to use. Let the pupil learn to work with as few utensils as possible.

8. Teach the girls to work for speed and at the same time insist upon good work.

9. Let the pupil experiment. It is better to waste a small amount of material to fix a principle in the pupil's mind. Many teachers

think it saves time and material to tell the girl rather than let her find it out for herself.

10. It is better to fix one principle in the mind of the pupil by repetition than to try to teach more subject matter.

11. Many try to teach too much theory which is foreign to the problem at hand.

12. Technical language is often a stumbling block to pupils without scientific training. Use references suited to the pupil. (For example in grade work the effect of high temperature upon protein can be explained by telling the pupils too much heat makes the egg tough and leathery.)

13. Certain new facts often best presented by experiments. They are made clearer than by the explanation of facts. It is best if possible for the pupils to do the experiments themselves. Often wrong ideas are obtained by watching others do it.

14. If the experiment is done by the teacher, she should first tell the pupils what to look for or expect.

15. Give pupils questions to be answered out of their own experiences.

16. The use of the food charts published by the U. S. Department of Agriculture is recommended in the study of food principles and composition of food.

17. Never hurry a lesson by doing things for the pupils; let them do some things for themselves.

18. Microscopic work is usually unsatisfactory without a preceding science. The pupils do not know what to look for and therefore do not see it.

19. In the study of fuels, the essential facts of combustion should be given. The necessity of oxygen may be shown by a candle and arrangements of chimneys showing good draft and cutting it off entirely.

20. Good and bad conductors of heat might be illustrated by experiments to determine the relative time required to boil water in utensils of different materials.

21. The effect of heat upon food principles can be shown by experiments in which different degrees of heat are applied to starch, sugar, protein, and fat. For instance, an experiment showing the

effect of dry and most heat upon starch, one to show different properties of sugar syrup with different temperatures; one to show coagulation of protein and curdling or hardening with higher heat.

22. The theoretical reason for use of salt with ice in freezing mixtures can not be given unless class had studied physics. The temperature of crushed ice may be taken and the temperature of different proportions of salt and ice.

23. In the cooking of cereals the principle of cooking can be emphasized by a repetition of the same method of cooking but the kind of cereal used should be changed.

24. In the lesson on soft cooked eggs, it is suggested the best method for cooking be given. If given three methods, the pupil will not draw the right conclusion, the reason being due to the pupil's inaccuracy and lack of experience in experimentation.

25. Physiology of the grades may be enlarged upon. Enzymes in the digestive process will be a new idea. A good way to present this is by artificial digestion experiments as, digestion of egg white with pepsin; coagulation of casein by rennin. The process of absorption may be shown by osmosis.

26. To teach meal work a number of suggestions were given. After the pupils have had a number of lessons, then let them prepare a simple breakfast of foods they have already studied. At least three lessons in breakfast should be given. The menu may be changed each time such as different fruit, cereal, etc., but not a different method of cooking given. After breakfasts have been prepared in groups, each girl then prepares a breakfast using individual amounts for economy. This brings out the necessity of planning work and having everything in readiness at the proper time. These lessons can be followed by a test breakfast, the teacher being guest. The work may be divided among the pupils.

27. Serving is best taught in a lesson where no food is prepared. Pupils should go through the actual process, stress being put upon serving.

28. The bread lesson is a difficult one to manage in the short time usually given to the lesson. One teacher suggests the following: Three lessons are given on bread. The aim of the first lesson is to teach proper temperature for yeast in bread making. The pupils make the sponge and have attention centered upon temperature. The

bread is ready for the pans at the end of the class. The teacher bakes the bread.

The second lesson is centered upon kneading of bread. The sponge is ready when the class begins. The bread is finished and baked in this class.

The third lesson is a test lesson. The class makes Parker House Rolls. (In each lesson, twice the usual amount of yeast is used). Another good suggestion for teaching the kneading of dough to grade children was given. The full amount of dough is used and each girl takes her turn at kneading. The child gets practice in handling the large amount of dough as well as the motion used in kneading the bread.

The problem of differentiating between the fundamental and accessory elements in the syllabus is one which requires much work and study. The committee feel that only the mere beginnings have been attempted this year.

The outlines of the work in food, home, and clothing from fourteen high schools in the State were carefully studied to find out what the various teachers considered fundamental in her courses. The following results were found: Out of fourteen courses, all taught cereals, eggs, and cheese.

Twelve included fat.

Eleven included yeast breads, sugars, doughs and batters, salads.

Ten included potatoes.

Eight included cream soups, gelatin, fruits, frozen desserts.

Seven included sanitation of kitchen and meal work.

The study of fish, pastry, preserving, invalid cooking, left overs, table setting and service, fuels, cakes, canning, jelly making, stock soups, legumes, and nuts, were given by three, four or five teachers.

Those teachers giving the second year of food work seemed agreed that it should include preservation of food such as canning, pickling, preserving, and jelly making; invalid cookery; and the study of menus.

On sewing, out of sixteen outlines examined, all taught the making of undergarments; fourteen had drafting of patterns.

Twelve took up the study of textiles.

Eleven thought the study of the machine was necessary.

Nine taught the various stitches.

Six considered design and taught the making of a simple waist.

Five devoted time to care and repair of clothing, while very few considered the study of clothing with relation to health or suitability; the economics of clothing or the commercial patterns and their alteration.

It is a question what conclusions can be drawn from such a study. The study of clothing with relation to health, the economics of clothing, the use of the commercial pattern and its alterations and the care and repair of clothing are really fundamental and vital in the study of clothing, yet this study would lead us to consider them as accessories.

Where the home course is given, more uniformity in the subjects taught was found. The majority agreed upon the study of location of the house and surroundings, construction and cost, lighting, heating, ventilating, water supply, disposal of waste, care of the house, decoration, apportionment of income. The variables were study of plumbing, laundry work, personal hygiene, public health, disease, history of the house, furniture and furnishings, removal of stains, household accounts, division of labor, labor savers, emergencies, care of children, and nursing.

The committee wishes to continue this study further and asks that each teacher will help by sending from time to time suggestions and opinions to the chairman.

Miss Harrison stated that the committee had provided by designated typewritten sheets what in their judgment were the fundamentals and accessories in the course on the home, and invited discussion of the same and reports from individual teachers after they had used the suggestions.

Miss Helen Murphy of Decatur High School next presented the Home Course as Taught in High School. The paper was as follows:

The Home Course as Taught in the High School

In teaching the Home Course in the Decatur High School, we divide it among the Art, the Domestic Science, and Domestic Art Departments, each department taking a different phase of the work.

This paper covers the work done in the Domestic Art classes, but in order that you may have some idea of the complete course, I shall tell you very briefly of the work done in the other departments. The Art Department

takes care of the color, harmony and design work which we use in the home furnishing class. The following topics are covered in the Domestic Science class:

1. Locality:
   (a) City.
   (b) Country.
2. Materials for building:
   (a) Brick.
   (b) Wood.
   (c) Concrete.
3. Plans for kitchen, dining room, and pantry arrangements for convenience and labor saving.
4. Study of plumbing, and its care.
5. Study of different methods of lighting, heating, and ventilation.
6. Visits to hardware and furnishing stores, to select utensils and equipment for kitchen; cost of same.
7. Suggestions for remodeling of homes, and cost of running a home.

The part of the course covered in the Domestic Art Department deals with the interior of the home. This work is given the sixth semester. The class meets twice a week with one and one-half hour periods, and the following topics are covered:

1. Evolution of the home.
2. Factors involved in making a home.
3. Plans for a bed room, a living room, and a dining room.
4. Wall treatments.
5. Floors and woodwork.
6. Floor coverings.
7. Curtains and draperies.
8. Furniture.
9. Pictures.
10. Decorating and furnishing a bed room, a living room, and a dining room.
11. Care of the home and furnishings.

In discussing the topic, evolution of the home, we begin with the tree dwellers, then take the homes of the cave men, the wigwams, log cabins, and so on, tracing the development of the home to modern times. The factors involved in making a home, cleanliness, order, simplicity, and harmony, are considered.

In our study of plans, the class collect from magazines and newspapers printed plans. These are used for class discussion, the plan for bed room, living room, and dining room being the ones we are most interested in, as these are the rooms we furnish later in the course.

After the study of plans, the next problem is decoration in relation to walls, floors, and woodwork. In the decoration of walls, the treatments to be thought of are calcimined and painted walls, walls covered with paper, bur-

lap, canvas, and muslin, and the suitability of each treatment from economic and sanitary considerations. We obtain from some decorating firm a sample book of wall paper. Among the good designs to be found in the book are, also, many poor ones. Here the girl gets a chance to use her own judgment in making selections and such questions as when and when not to use a figured or a striped paper can be decided. The class are now ready to decide what colors should be used for rooms having a different size and exposure. Many in the class, of course, prefer to use either a wall paper or burlap, but for the present we disregard their preference as what we need now is some practice in choosing harmonious colors, so we select colors for flat tone treatments for the walls, and make small wall panels showing a record of our choice.

The next topic considered is the floor and woodwork. A list is made of woods suitable for woodwork, and different treatments for woodwork discussed, painted, stained, or finished with wax or varnish. Color as well as durability is kept in mind. Floors are divided into three groups: Floors for kitchen and other service rooms; floors for rooms to be carpeted, and polished hard wood floors.

The following topics are also considered: The refinishing of old floors; the advantage and disadvantage of hard wood floors, and care of floors.

Floor covering is the next problem for discussion. The different kinds, matting, linoleum, carpets and rugs, and the suitability of each from the economic and hygenic standpoints are studied. Sample pictures of carpets and rugs are used as a basis to show good designs. Discussions on the advantage and disadvantage of rugs over carpets, and the correct laying of carpets and placing of rugs are given. To familiarize the girls with the different makes of carpets a list is made of the domestic and foreign weaves together with the width and price per yard. Each year when studying the subject of floor coverings, we have been fortunate in having an expert on oriental rugs from one of the department stores kindly consent to talk to the class.

We are now ready to take up the topic on furniture. We learn a little about the furniture of the different periods. In our study in furniture, the girls collect from magazines, newspapers and furniture catalogues pictures of different types and styles of furniture. We discuss the good points and look for these points in our pictures. A visit is made to the furniture departments of different stores where the girls have an opportunity to see the actual pieces of furniture and obtain prices. This visit is always of interest. In our next lesson, the essential pieces needed in each room are decided upon considering utility, economy, and labor in handling.

Curtains and draperies come next. The purpose of a window and the use of curtains are discussed. The class makes a collection of materials suitable for curtains, over curtains, and draperies. The samples brought to class vary in price from the five-cent cheese cloth to the more expensive scrims and voiles. These form a basis for textile study, as to quality, width, price, and the laundering and dyeing properties. A study of the correct hanging of curtains and draperies is made. Each girl now makes a chart in which she uses the samples collected to make color and textile combinations.

Following this lesson comes a discussion on pictures and bric-a-brac, including the correct way of framing and hanging pictures, and pictures suitable for different rooms.

The last problem is the planning of decorations and furnishings for a bed room, a living room, and a dining room. In working out this problem the personality of the different members of the family is considered, and the principles of decoration which we have learned are applied.

The principle of unity—one definite idea adopted in planning the whole house, is emphasized; also simplicity—things that meet the needs of comfort and daily living, keeping within the income, and avoiding the selection of unusual and pretentious furnishings.

The opportunity is offered each girl to use her originality in home decoration, and she writes a full description of the wall treatment, floor covering, curtains, and draperies which she will use in decorating the rooms she has selected. She also tells in this description the style of furniture she will use and the names of the different pieces for each room.

In planning the furnishings for the bed room, the bed, its equipment and care, are given special attention. The selection of bed linen as to size, quality, and price of sheets and pillow cases, is considered, and whether to buy ready made or to make them.. An opportunity for a lesson in textiles is offered also in connection with the furnishing of linen for the dining room, and also a lesson on the care and repair of household furnishings. During the course, each girl makes some article to be used in the home. The mother is consulted and different articles such as bed linen, table linen, curtains, and furnishings for the living room are made.

In connection with the work, each girl makes a book which contains her reference work, color schemes for rooms, and color combinations of materials.

Home Course

Fundamentals	*Accessories*
Shelter and home life Home in immediate locality Factors involved in making a home	Home life of different peoples and ages; primitive, ancient, medieval, modern Advantages of older and newer houses Imperfections of each
Location Surroundings and amount of money to be spent Study of soil and site	
House planning and construction Essential parts of construction Division of floor space Study plans in magazines Plan living room, bed room, and kitchen	Visit houses in process of construction Study old houses and how remodelled Study of houses and flats Materials for building: brick, wood, stone, concrete Fire and building laws

Heading, lighting, ventilation Relation of heating and lighting to ventilation Relation of respiration to ventilation: natural, mechanical Fresh air in relation to health	Study of various systems as to construction, convenience, cost, and efficiency Study of fuels and management of fires
Water supply Source of public and private supply Report on home well or cistern Necessity for pure water supply Sources of contamination	Visit water works and sewage plant Report on work of State Water Survey and Public Health Methods of purification, municipal and domestic
Disposal of waste Sewage and garbage Rural and city methods Immediate, final	Relative merits of various ways of disposing of waste Sanitary, economic
Plumbing Location of pipes in relation to health Care of pipes, reference to cold, ease in repairing and cleaning	Fixtures, pipes, traps Purpose of seal, how maintained
Finishing Interior Floors, walls, ceilings, suitability Cleanliness, durability Artistic effect	Exterior Material, color Collection samples of papers and other materials suitable for wall coverings Collect samples of woods suitable in kind and finish for the interior Try different methods of finishing samples of wood
Furniture and furnishings Consider as to Use, fulfilling of purpose, suitability, sanitary value, harmony and color, good line and form; quality and cost of hangings, rugs; floor coverings; plan color schemes for rooms with different light exposures	Special needs of each room Trip to store and factories Make list of furniture and furnishings for each room Practice selecting and combining samples of wood and wall coverings
Care of home The house Source and danger of dirt Ways of preventing accumulation of dirt	Lawn and garden: laying out and care of Clean glass and metals, woodwork, refrigerator Make and use furniture polish

Materials for cleaning
- Cost and value of agent used
- Care of different rooms
- Care of various kinds of furniture, etc.

Laundry work
- Materials used; water, soap, bluing, starch
- Sorting clothes
- Removal of stains
  - Steps in the process

Agents for softening water
Making Javelle water
Wash and iron
Household pests

Care of person
- Removal of waste from body
- Skin, its structure and function
- Effect of baths, hot and cold
- Effect of exercise, fresh air, diet
- Relation of exercise, fresh air, sleep, diet, and cleanliness to health

Care of family
- The young and aged
- Contagion, infection
- Air, water, food, as carriers
- Insects and animals as carriers
- Dangers of public drinking cups

The Sick
- The home nurse, her characteristics and duties; care of herself; care of sick room

Precautions to prevent spread of disease

Work of Board of Health
Protection of public on street and car
Examination of milk, water and food supply
Emergencies
- Treatment for fainting, wounds, burns, drowning, suffocation

Poisons
- Classes, treatment

Transporting the injured

Maintenance of the home
- Relation of individuals to family as a whole
- Division of labor
  - Some responsibility for each member of family
- Management
  - Division of income
  - Economy and use of money
  - Importance of planning
  - Keeping accounts
  - Economy in time and strength

Buying
- Relative merits of cash and charge systems
- Banking
- Buying in quantity and storage
- System in work
  - Various kinds of work
- Importance and use of leisure time
- Relation of home to society
  - Effect of extravagance

The discussions of the home course which followed show that the home courses as given vary greatly. Many of the problems in the home course can be included in the food and clothing courses if time permits.

In the Round Table Discussion on Methods of Teaching Food Values, Miss Alice Treganza asked the following questions: What are the motives of the high school girls in studying food values? How much dietary work do high school girls need? Shall we set apart a certain part of the year to teach food values or give it day by day? Shall we make it chiefly drill in number work using printed material or can we make the work so concrete that one hundred calories of a food will give a picture to the girl? In her study of food values, she begins with the definition of the calorie and some discussion. Then the class weighs out one hundred calorie portions of the foods which they prepare. At the close of the special study and preparation of a certain class of foods, such as vegetables, an exhibit is prepared. Each girl prepares a one hundred calorie portion of a certain vegetable and its cost. Then a comparison of the value of these vegetables from the calorie standpoint is made. The number of servings the portions would make, and the cost, are compared. This number of servings is also compared with those given in the printed lists. Such questions as, if you were depending upon your vegetables to bring up your calories without any other consideration, which vegetable would you serve? The results of each girl's experiments are placed in her note book to be used when planning meals. This method is followed with each class of foods. Later, vegetables, cereals, meats, etc., are compared after carbohydrates, fats, and proteins are studied. They calculate the energy requirement. Each girl is told to make a record of all food she eats during a day, and bring this record to class. They are then taught how to calculate energy requirement and each girl figures her own. Each girl then works out the value of what she has eaten and compares it with the standard. She next calculates what she could have added to her day's meals or could have omitted to make her diet for the day more clearly correct. The records showed that the amount of food eaten by the most healthful and most active girl in the class was almost identical with the standard; while the pale, sickly girl was eating far less than the total requirement. Each girl next plans a day's ration for some member of her family, after calculating the energy requirement. All work together in figuring the require-

ments of an imaginary family with regard to occupation and amount of money to be expended.

Another method of teaching food values was given. The body weight of each girl was the basis for her energy requirement. Meals for three days were given. The standard set for high school girls' meals by Mrs. Mary Swartz Rose was used. This was followed by the study of liquid, semi-liquid, and solid diets and diet for various diseases.

Another teacher showed how the course began with the study of food for the infant, modified milk, the food requirement and the preparation of food for a child one and a half years, three, five, and six. The study of the school lunch and the number of calories it contained is next given. The meals of the child of eight, twelve, and high school age is next studied. Each girl is then required to prepare a luncheon computing the cost, the approximate number of calories in the servings. At the end of the year an exhibit is given. Certain foods are weighed out into one hundred calorie portions and displayed, showing the amount of food necessary to make 2800 or 3000 calories, the average amount required. Different combinations of all foods are shown. It was suggested that the hundred calorie portion or serving be interpreted into pound equivalents or compared with a known amount of food, as the quart of milk. It was the consensus of opinion that food values should not be studied from the one hundred calorie standpoint before the senior year of high school. It was also suggested that the calorie is not the only consideration and it was quite as important to teach the need of mineral matter and the restriction of protein. The references used in this study are: Food Values and Practical Methods in Diet Calculation, by American School of Home Economics, Chicago; price ten cents; Food and Household Management by Kinne and Cooley; Diet List of Battle Creek Sanitarium, Battle Creek, Mich.; Laboratory Handbook for Dietetics, Mary Swartz Rose; U. S. Department of Agriculture, Bulletin 28, Chemical Composition of American Food Materials; and Principles of Food Preparation, Mary D. Chambers.

The nominating committee next reported Miss Anne Greene of DeKalb and Miss Bertha Case of Peoria as the new members of the executive committee. The report was approved and accepted.

Some Problems in High School Sewing was presented by Miss Greene of DeKalb Township High School. Her paper was as follows:

Problems in High School Sewing

In determining all courses in home economics education, we must first establish firmly in our minds just what the aim and purpose in each and all our courses shall be. These aims differ in wording with different home economists, but it seems as if the simplest way of stating it is training for parenthood, not only the parenthood for their own children, but the wider conception of that highest and finest of ideals, namely, the parenthood of every child in the community.

How then, are our courses in domestic art, which includes, the study of textiles, the principle of design and the making of garments, to aid in the carrying out of our purpose? We must try to realize conditions as they shall be a few years hence in order that the girls in our classes may become efficient women, independent and alive to their surroundings. Every minute of their preparation is valuable and with the multiplicity of duties which are continuing to fall on the woman of today, we must determine what is the minimum amount of material which we can give the high school girl to fit her for her life to come. So often we say, "How much shall we teach?" Rather, let us take the point of view of what is the least we can give so that each girl may meet her obligations with confidence, self control, and that ability of meeting her difficulties with sufficient mental and motor training to make her success a surety.

The work in high school sewing classes may be divided into two divisions; first, the training in general education to make well developed women. They must have control of their hands so that they may execute the ideas which develop in their brains. The love of pretty, appropriate clothes, or, perhaps, better the desire to appear at her best is inherent in all girls and when a girl has not this dominant characteristic she is not a normal girl or her nature has become warped in some way through living in an atmosphere in which the human element is lacking. Then she must be able to intelligently clothe her family and this training is part of her necessary education.

The second division is the training for vocational or trade work in order that through this means the girl may earn a decent living. This side of the work is not the problem in the average high school. It is a problem of specialization undertaken in the technical high school and trade school. It is far easier to determine the requisites of a vocational work than to meet the requirements of a home maker.

We are all familiar with the changes in ready made garments in recent years and their steady improvement is evident. That there is still vast room for more improvement we will all agree. But this idea brings us to a very vital problem. Can we not really measure the taste of the general American public by the clothes put out by the factories? Is that not a means of judging what the average woman in America considers beautiful in clothes, what she

considers the acme of taste, durability and workmanship? If she did not, would she be willing to buy such stuff as we find heaped on counters in our department stores? Of course there is an economic condition there which drives a woman to buy something she really does not approve of because she has not the time to make for herself such underwear and other clothing as she would desire. In high school work we meet with the human beings who are to form the substantial opinions of the future. They should have a broad view point, for they have not been choked in the struggle with poverty, nor have they the superficial qualities so often developed in a luxurious environment. Here is an opportunity to create a better taste in dress in the next generation. It is only through education that this may be developed in our nation.

An important economic factor which must be impressed on the high school girl is the value of time. Machinery has been made to lessen toil so that men and women may have more time to live. Should we not strive to raise the standard of machine made laces and embroideries so that even in the cheaper grades we may find beauty and durability? This may be accomplished by eliminating trimmings entirely from plain every day garments so that more may be spent on something really worth while—or to use just a little good trimming rather than display cheap lace.

Many times the standard of work demanded from the beginner is more than should be expected and pupils who have the tendency to get things done in a hurry find this a stumbling block. Work must be done fairly slowly to be accurate, but need we stretch it over so long a period of time as is often the case in sewing classes? If we compare the beginning work in writing with the work in sewing, we find some similarity. Both involve working muscles in the hands. Of course, the child in the first grade is not expected to make the progress of the older girl, but should we expect perfect work from the beginner in sewing?

Our standard is that the work must be neat and that it will hold. We demand visible signs of improvement. This is explained to the girls at the beginning. Some girls that come to us have sewed and some have never held a needle. If it were possible, I should like to divide these groups into two classes, but it is not possible, so we go carefully over the steps in making the first garment and in a short time it is easy to tell the work each girl is capable of and to realize just what improvement has been made during each month. At the end of the semester the girl whose work shows constant improvement secures grades as high as the girl whose work may be perhaps more accurate but who has not made as great an effort. I do not demand constant ripping in my classes. If it is radically wrong, carelessly done, or will not hold, of course it must be done over. But I do not blame girls for rebelling when they take courses in ripping instead of sewing.

In connection with standards comes the problem of how much work to demand from girls who have had sewing in the grades, who are in classes with girls who have had none. We meet it in this way and it works out pretty well. Every girl must keep busy during the class period. If she is not doing her best her grade is lowered.

Let us take first the study of textile fabrics. We study the different fibres as we use them in the different materials into which they are woven. In class discussions and through outside reading the characteristics and commercial value of each fibre are considered. We discuss its shrinking, felting qualities, its elasticity and resiliency, its ability to conduct heat and the effect of acids and alkalies upon the fibre. We make some simple household tests for weighting and adulteration. Samples of standard and novelty materials are obtained from the stores. We discuss the differences in weaving and finish, the width, price and wearing qualities. The cost is an important item and to this must be added the cost of keeping clean in wash materials. When underclothes are to be washed at the laundry, it is very necessary to have strong serviceable materials. One cannot expect service from weak threads nor from fibres affected by the strong alkaline washing solutions used in the large commercial concerns.

Numbered samples are passed around the class and the students name them, giving the price and quality. It is surprising how very interested they become in learning to judge materials and take pride in being exact. When one comes to the choosing of cloth for the wash dress we have other textile problems to meet. Each year the manufacturers give us new materials and the relative merits of these new fabrics must be compared with the standards and the question of economy in buying novelty cloths must be determined. We make tests for shrinking and fading. Linen is studied when we begin work on the wash dress, for many girls wish to make linen dresses. This gives a chance for comparison of the cotton and bast fibres.

Wool and silk follow these as they are used in connection with the advanced work. We have samples of the various materials, their width, and average price listed. We discuss the suitability of these materials for different occasions. The difficulties in cutting, resulting from diagonal weaves, the nap of the material, must not be omitted. It is not necessary to spend much time on this work for if it is carefully organized it is so intensely practical that it is easily mastered. Every girl feels a vital interest in it.

Having studied the different kinds of cloths suitable for her problem, the high school girl has developed a set of standards and when she goes to buy a fabric she will use some intelligence in her selection.

In the construction and repair of garments it is essential for a girl to know the stitches used in sewing and do them well. Let us go hastily over the list. She must know when and how to use basting, running, backstich, overcasting, over handing, hemming, plain, damask, and roll; buttonhole stitch, machine stitching, some of the simple decorative stitches, and the weaving or darning stitch. She must understand a machine and know how to use the attachments. The plain seam with overcast edges, the French and fell must be learned and when and where each can be used to the best advantage. Gathering and adjusting ruffles, three different plackets, binding, how to adjust bands and belts, cutting a true bias, joining and sewing on lace, sewing on buttons, hooks and eyes, and snaps, setting in sleeves, hanging skirts, matching plaids

and stripes, piping, patching and darning, and the making of button holes must become familiar tasks to every girl.

Where time is limited it is necessary to make a list of these processes and select in the under garments such as will bring out the most of the above processes. In many cases two will be all that will be necessary. Why waste a girl's time making all of a suit of underwear if we can teach what they should know on less? If she understands these thoroughly she is able to make the other garments, without further instruction. This leaves more time for actual dress making, which, it seems to me, is the real problem nowadays. One can buy underwear to much greater advantage than dresses and the dress problem involves the principles of design and color harmony, thereby increasing our opportunities for esthetic training.

The principles of design are of the most vital importance in our sewing work and must be inculcated into the minds of every girl. Whether she will apply these principles in all her clothing cannot be answered, but there is no question but what it starts some thought and discussion in regard to the planning of clothes. We do not do much of this until we come to the problem of the first dress. In making the undergarments we endeavor to get good lines and models suitable to be worn with gowns made according to the prevailing fashion. But the real discussion and study of the problem is postponed until we are ready to plan the dress. The points which we emphasize are what constitutes good lines, good spacing and color harmony. We use a rectangle to represent the figure and divide it off to find out what would make an interesting spacing by verticals, horizontals and obliques. The student may readily see what spacing is best in the long narrow rectangle and how that is far from interesting in the one shaped more like a square. From samples of materials we pick out interesting and uninteresting designs in stripes and plaids. This is a test by which the student may show if she really understands what she has been taught. A discussion of square, round and pointed yokes for different shaped faces, of wide versus narrow belts for stout figures is most helpful and aids in securing appropriate designs for each type of girl. Instruction of this kind should in time develop a better taste in the community.

A high school girl loves to follow new fashions and she must be taught to adapt these styles that they may be becoming to her particular type. If the discussion on the economy of buying clothes follows one on the most recent fashions it helps the girl who must carefully consider cost to be wiser and more conservative in adopting fads. The students bring in the common fashion sheets and with the standard books we go over the styles given in them and try to choose those suitable for each girl's figure, altering them where necessary.

The study of color is most fascinating and it is well worth while to spend some time on this. Usually girls delight in it. In order to do this intelligently one must understand the meaning of hue, value and intensity in color and what is meant by color harmony and contrast. After discussing the different types of complexions, each girl tries to select a color which will tend to bring out her best feature. There is esthetic value in this for it helps one to notice color in

all nature. It also makes the girl realize that her clothes are the setting for her personality and it is the beautiful girl not the beautiful gown which delights the eye of the observer.

The difficulty of getting something original or unusual out of the classes is a perplexing problem. There is such a sameness about so many of their things. At home they select a pattern which mother or sister can make and they prefer to look like some one else rather than appear in anything different. When the dress is to be a simple school dress, this is not so distressing, but when it is otherwise and the gown is to be made in the sewing class, it proves a difficulty. When girls have lived in very limited surroundings, particularly in the smaller community, they often do not have their imagination cultivated to any great extent. It is impossible, with certain girls to get them to plan out in their minds any little touches which will give the garment any individuality. We sometimes take the outlines of figures from the fashion plates and try to develop some original ideas. Given the outline of the figure, the student, even though she cannot draw, can divide it off for interesting spacing, and work out some scheme of trimming. They are usually more open to suggestion after these discussions and the group becomes very interested. Of course the last problem depends entirely on the community and perhaps would never occur in the larger city where even the poor child has the benefit of the store windows.

The third division in this work is the teaching of the sewing or the actual manufacturing process of cutting and sewing the garment. The first step in this is the pattern. With the good commercial patterns which we now have there is much debate on the part of many sewing teachers in regard to the value of teaching drafting to girls who are merely taking sewing to make them more efficient workmen. There are three objects in teaching drafting, the first perhaps to teach the actual making of patterns, second to supply the need of a class pattern, and third to make them understand patterns so that they know how to change the lines or to alter them to suit their purposes. This last is the real problem and of sufficient importance to make drafting well worth while. In our high school each girl drafts a simple waist and skirt pattern and after so doing she is able to use the commercial pattern more intelligently and is also independent of them. I have tried teaching drafting and not teaching it, and I have been so much better satisfied with results when we have given the time to it. We use just a yard stick and tape line. We study the commercial pattern and ways of changing it without altering the lines or to make better lines for the style of figure for which we are to use it. To be able to measure accurately and to check them is quite a simple process after the student has drafted a pattern and tried it. By comparing her measures with those of a perfect figure, she will be able to realize where the commercial patterns will be likely to give her trouble. From her waist draft we make the night gown and corset cover and from the skirt we develop the drawer draft.

Having obtained and checked the pattern, the next step in construction is the placing of the pattern on the material and cutting to save the material. Here may be taught the saving of material, the difference between warp and

woof. The processes of construction must be taken up with the class by discussion to give a thorough understanding of the principle involved. This is accomplished more easily by making an outline of the steps on the board and this is left until the garment is completed. After it is finished review what has been learned by making this garment and when the next garment is presented we find how we may use these again.

Two semesters of sewing in the high school is given. We have a forty minute period every day. It would be much easier if we had a longer time for getting work out and putting it away leaves us practically thirty-five minutes a day. We have a system of supervised study which gives the pupil forty minutes extra time with the teacher once every two weeks. This is very valuable in giving help to the slower pupil and in checking up points which have perhaps been slipped over in class instruction. In the thirty-eight weeks the girls draft a waist and skirt pattern, make a corset cover, underskirt, nightgown with set in sleeves or a pair of drawers, wash dress or waist, and at the holiday season we take time for a few lessons in decorative work and damask hemming. This is merely to get in stitches not involved in the garments made and to encourage the girls to make some of their gifts.

In the second semester we review the work of the first semester by making a combination suit, a lingerie dress if it is in the spring and a simple wool challie if it is in the fall, a tailored wash skirt and one other garment which they may choose themselves. We demand some home work and it does not take much experience in judging to know when the work is mother's or daughter's. It must be well understood just what is being done at home and that if it is not right it will have to be taken out. We give five to seven recitations to textiles and these are scattered through the semester. Do not insist on the girls making what they do not wear, for one cannot gain real results without interest. If what they choose does not involve all the processes of construction they must have, we resort to the old fashioned sampler.

The student must realize that she is producing when she is making garments and really earning; that the longer time involved in the construction of a garment involves greater cost. Miss Weigley started shop records of the girls' work and these help greatly in counting the cost of the finished garment. The girls fill these out in computing the cost of the garment.

Another phase of the problem in the creation of a better taste in clothing may be obtained by the joy a pupil gets from this mode of self expression.

After girls have made their own clothes and have developed a set of standards for judging this work, they ought to have a greater sympathy for the woman who must earn her living in the factory doing just one part of garment making. When we all happen to be doing hand work, I make a point of talking to the girls about the Consumer's League and the National Trade Worker's Union. We talk over the necessity for sanitation in the factory and the store and if they find any articles in the newspapers or magazines, we bring them to class for others to read and if possible we discuss them. These are things in which our girls should be interested and it seems to me we are neglecting our opportunities unless we make an effort to awaken them. Then, we may also develop altruism in the class by having them do some-

thing for some one else. When pupils finish a problem before the others, I have some children's dresses for them to work on. Last year we made six little night dresses for the philanthropic committee in the Woman's Club. This year we have three little gingham dresses for the poor proteges of one of the teachers. This work must be done as accurately and carefully as any other and they are marked on it the same as that on their own work.

In working with the high school girls, we must remember that they are neither children nor women but in that in-between stage when they develop the most grotesque and erratic ideas. We cannot force mature judgment upon them, for they are living individuals and have a perfect right to their own opinions. So often teachers of sewing do not use sufficient tact in obtaining the results they desire and produce an antagonism which is disastrous. We must go down to the girls' level and lead them up to ours.

The method of meeting the problems in each high school depends on the community. It is hard to realize this sometimes until one finds how very differently separate groups look at things. These are some of the difficulties we are facing and I have tried to tell you how we are meeting them.

The discussions which followed brought out such questions as: If one half year is devoted to clothing, how much time should be given to hand work? To drafting? Just enough hand work should be required to familiarize the girl with the stitches necessary to do her work successfully. It was agreed that no drafting should be taught in one-half year of work. The subject of home work in sewing was discussed, those favoring and disapproving of it being about equally divided.

Miss Leona Hope of the University next spoke on "Principles of Design as Applied to Dress." Her paper in part was as follows:

Women are often criticized for spending too much thought on dress. The criticism should be that they do not spend enough *intelligent* thought on it. There are a few questions which we should answer first. How do fashions originate? Why do they change so frequently? Is the fashionably dressed woman the well dressed woman?

Three classes of women are responsible for fashions: first, the woman of wealth and social position who goes to some celebrated house and orders a gown suited to her type and personality and for some particular occasion. It is worn in public, reporters describe it and sketch it; finally it appears in a fashion magazine. In the second class are the actresses whose gowns are often a striking decorative feature in a stage scheme. People admire and imitate them and they are copied for fashion magazines. In the third class are the

demimonde whose clothes are striking and the "very latest" and made for the purpose of attracting attention. These are copied and we see costumes designed for people of particular types and occasions being worn by other women regardless of appropriateness, individuality or fitness of purpose.

Why do fashions change so frequently? To keep the dressmaker and milliner in business.

Is the fashionable woman the well-dressed woman? It depends upon the fashion and whether what is worn is in harmony with the type, the occasion, and the purse of the wearer. Fitness is the keynote of good dressing.

How, then, can we achieve better dressing? We must go to the root of the matter. Young people must be taught the principles which govern correct dress. These principles are the same as for pure design, namely, rhythm, harmony, and balance. When rhythm is understood, then there will be better line and proportion in clothes. When harmony is understood, there will be no lace collars on sweaters or party slippers worn with tailored skirts. Clothes designed for others will no longer be chosen by women regardless of their own individuality. When balance is understood, hats will be worn no longer over one eye.

The consideration of these principles, then, is a reasonable solution of the problem and one which all should be willing to try. When women understand the application of the principles of rhythm, harmony, and balance to dress, they will then know how to use fashions. They will not choose what pleases them merely because it is pretty. In other words, more intelligent thought will be given to clothes and fashion will then be the servant rather than the master.

The report of the library committee was given on the minimum list of books and a maximum or more complete list of books for the library. The report was referred to the committee for further study before being adopted as final. Following is the executive committee for next year.

Florence Harrison, University of Illinois, 1917, Chairman
Isabel Bevier, University of Illinois, 1917
Mabel Dunlap, Decatur, 1916
Esther Bedker, Kenilworth, 1917
Anne Green, DeKalb, 1918
Bertha Case, Peoria, 1918

FLORENCE HARRISON, Secretary.

English Section

[Report of the Seventh Annual Meeting of the Illinois Association of Teachers of English.]

The seventh annual meeting of the Illinois Association of Teachers of English was called to order at 9:30 A. M., Friday, November 19th in the Moot Court Room of the Law School of the University of Illinois by the president. After predicting that henceforth the meetings of the Association would be called to order at the time designated on the program, and after appointing a nominating committee consisting of Professor Dodge, Professor Paul, and Miss Isabel McKinney, President Richardson spoke informally upon a topic not hitherto announced, "New Things in the Teaching of English." The first innovation commented upon was the use of magazines as text-book. These are, it appeared, being extensively employed in composition courses as a basis for both oral and written work. The results, it was pointed out, seem to justify their use, for they furnish invaluable material on which to base work in composition—particularly oral themes. Its usefulness is due to its being so vital, and hence related to the pupils interests.

The second novelty dwelt upon by the speaker was the awakening interest in high-school study of the Bible. These courses are not being introduced into the formal curriculum of the high school, but are pursued outside the school, which, however, gives credit (upon examination) for the work accomplished. The amount of credit varies somewhat in different states. The schools of North Dakota and Indiana allow two hours of credit, while Colorado gives but one high school credit for this work. It was due to the initiative of the Indiana Association of teachers of English that the "North Dakota Plan," as it has been called, was introduced into the Shortridge High School at Indianapolis, and, later, into other high schools of the state.

A third variation observed during the last year has been the formations of subsidiary organizations of English teachers. This has been an attempt to interest a large number of teachers through the formation of small, local clubs. The movement is yet in its beginnings but, even in its inception, it promises much for the future of English teaching in the state.

President Richardson concluded his address with some general remarks upon the teaching of English, affirming that we study English

to gain three things—power of self-expression, a mastery of the self-expression of others (literary appreciation), the power of expressing the thoughts of others (oral reading, dramatic impersonation, etc.). In the study of literature the speaker emphasized the value of biography to hold the pupil's interest, and the use of stories to enlist his attention. In the approach to literature one should assume the attitude of one who has himself passed over a beautiful road, and is conducting a friend over the same route. He advocated the constant effort to elicit the pupil's own opinions, however crude they may be; the attempt to arouse the student's curiosity about allusions; to enable the child to see pictures in figurative language; and to appreciate the language of poetry, which is the language of suggestion.

The discussion that followed was animated. Upon Miss Skeffington's request for accounts of what other teachers had been able to do with magazines in the class room, several teachers made it clear that the use of magazines was by no means the novelty that we had supposed, but that they had been in use in some schools for four years with excellent results. Mrs. Lucy Nelson of Decatur, Miss Turnbull of Mattoon, Miss Graham of Naperville, have used periodicals as aids in teaching the art of impromptu speaking. Most of those who spoke agreed that "The Literary Digest" was most useful, because the subjects discussed in that journal are classified. The latter paper has, it was reported by Mr. Trams of Joliet, actually been utilized as a stimulus to the study of business letter-writing, the pupils having been encouraged to write to business firms advertising in the periodical. Other schemes, not less ingenious and effective, for vitalizing the student's work through these journals were reported by Miss Woods of Petersburg and by Miss Morris of Champaign.

There followed a discussion of the introduction of Bible study in the schools. It was closed by Mrs. Nelson of Decatur, who briefly, but impressively, advocated the introduction into the schools of illinois of the "Dakota-plan," affirming the value of the study as a means, not only of literary, but of ethical culture.

Miss Skeffington of Charleston next spoke on Local Clubs for Teachers of English. After giving an account of the formation of a local club and of the first meeting of the club, attended by representatives of eight high schools, she spoke of the plans for local clubs in other centers, three being already in prospect of organization. She then went on to speak of the advantages of having these local clubs—

of the opportunity they afford for the informal discussion of problems relating to the work of the English teacher, for unifying and standardizing the work of local workers, for arousing local interest in the State Association, and as a means of cooperating in helpful ways with the executive committee of the Association. She advocated only a loose, or rather an elastic, relation between the clubs and the parent organization; and for the subsidiary organizations, only the simplest kind of self-government. The meetings, she said, should occur not oftener than twice a year at some convenient center, and should be thoroughly informal. There should be, Miss Skeffington thought, a simple dinner, and much unrestrained discussion.

Mr. W. M. Smith of Whitewater, Wisconsin then presented a paper on The Equipment for Teaching English in the High School. This was a report of the year's investigation. The report follows.

The Report of the Annual Investigation of the Illinois Association of Teachers of English for 1915

A Questionnaire on the Material Equipment of the High School for English

A questionnaire is now-a-days the most obvious form for investigation to take. Its long array of glittering particulars, tabulated comparisons, and sounding percentages satisfies the modern craving for concrete fact. But strangely enough, we do very little with these facts, once gathered. There they stand, a willing phalanx, ready to attack the evils of the educational system and there, most often, they remain.

Nevertheless, questionnaires do help to accumulate a weight of opinion based upon actual conditions and ideas. They intensify a dissatisfaction which eventually may lead to some constructive work.

No high school subject has been more severely criticized than English. It has been claimed that the average high school English course fails to give either a cultural or practical training; that the graduate too frequently abhors Shakespeare and is unable to write a decent letter.

As a result of much unjust as well as just criticism, English in the high school is in a process of readjustment. We seem to have determined a few principles for the new structure. Foremost among these is the dictum that English composition must be practise, not theory, and that literature must emphasize the social rather than the aesthetic aspect.

In attempting to teach English upon this basis one finds an appalling lack of material equipment. Schools that appropriate one thousand dollars for practise material in science spend ten per cent or less on the work rooms and working tools of the English teachers. It is true that the essentials of educational reaction are the teacher and the pupil, but the log is becoming more and more important. English today demands material equipment as well adapted to its ends as does chemistry.

The Illinois Association of Teachers of English determined to investigate the situation in the Illinois high schools. As in most questionnaires, two purposes were involved, quantity of material and concensus of opinion. We wished to find out just how much physical equipment for English work there was in the Illinois high schools and to gain an expression of opinion from the teachers on the subject.

It was the opinion of the committee that the questionnaire should be sent to all sections of the state and to schools of varying size. Excluding schools outside of the state, 135 high schools were addressed. Forty-five of these had enrollments of less than 150; thirty, of less than 300; twenty-five, of less than 600; and twenty had enrollments ranging from 600 to 2,000. Seventy-one replies were received (55%); twenty-six of Class I, sixteen of Class II, sixteen of Class III, and twelve of Class IV responded.

Recitation Rooms. Only 25% of Class I have a separate recitation room for English work, and but 50% of Class II. In one school of Class IV, having an enrollment of 900, the English recitations are held in whatever room the pupils are seated in for study, the teachers passing from room to room. This method, however, is uncommon. The seating capacity of the recitation room averaged 30. The largest schools are forced by crowded conditions to seat forty or forty-five students in a space meant for thirty.

Committee and Rehearsal Rooms. Thirty-three per cent have a room, or rooms, suitable for committees, debate teams or dramatic practice. Only 10% of these are near, or adjoin, the English recitation rooms.

Dramatic Facilities.

A. Stage in Assembly Room	70%
B. Dressing Rooms Adjoining	25%
C. Footlights	48%
D. Curtain	40%
E. Scenic Properties	20%
F. Furniture Properties	25%
H. Costumes	....

Fourteen percent have a smaller room equipped with a platform in which less ambitious dramatic work may be done before a small audience.

Filing Cabinets. The filing cabinet is just beginning to gain ground. Eight percent use the cabinet for filing themes, 5% for individual home reading cards, 7% for consultation cards, 12% for topical clippings from periodicals, 18% for illustrative pictures for class use, 35% for course outlines for teachers' guidance, and 27% for class grade cards.

Maps. Sixty-five percent have in the recitation room a map of America, 78% England, 28% a literary map of England.

Notebooks. The laboratory size, loose-leaf notebooks are used in 60% of the schools with ruled paper about 8 x 10 in. in dimension—90% of the schools use ruled paper. Forty-five percent ask the pupil to provide a small pocket notebook for assignments.

Lanterns. Twenty percent have projecting lanterns, 30% stereopticons.

Moving Picture machines. Only two of the 71 schools responding have moving picture machines.

Victrolas. Fifty percent have a victrola or similar machine, a rather surprising average.

Duplicator or Mimeograph. Eighty-five per cent have either one or both of these devices.

Typewriters. Ten percent have a typewriter for the exclusive use of the English department.

Bookcases. Sixty percent of the recitation rooms are equipped with bookcases.

Teachers' Desks. Ninety-five percent of the English teachers have an individual desk.

The crying needs of the schools in the matter of mechanical equipment are, evidently, more rooms exclusively for English recitation, committee or practise rooms, dramatic facilities, filing cabinets, specialized maps, projection lanterns, blinds for darkening the recitation rooms for lantern work, more sets of slides illustrative of English Literature.

A number of valuable suggestions might be recorded here. One is that English recitation rooms be planned in pairs with a club, committee, or rehearsal room between them. Another teacher suggests the preservation of properties and equipment for dramatic work through a self perpetuating committee. Reference books for stage direction and management is another suggestion. Still another teacher advocates a movable platform with curtains, such that any room might be made available for simple drama.

I regard a smaller room and stage as particularly valuable. The increase of informal presentation and impromptu dramatization is strengthening the present day pupil in his weakest spot—imagination. Such a room facilitates these less ambitious productions and gives the effect of intimacy so desirable.

Library Equipment

There is general agreement that a good high school library in charge of a trained librarian is essential to real training. The weakness at present is not a lack of books or rooms, but the infrequency of trained librarians in high school faculties.

Forty of the 71 schools have a special room for the library. Only 15 of the 71 have a trained librarian. In most cases the library is presided over by teachers in turn who regard the task as drudgery and have had no training in the routine of the work.

The reports on number of books in the libraries, accessions, comparative expenditures, etc., are so individual as to baffle generalization. The number of books ranges from 100 to 3,000. Accessions range from 2 to 20%. Thirty-three percent of these accessions benefit the English department. On an average $15 a year is expended upon periodicals, a sum ridiculously small.

Fifty percent of the schools are admittedly poorly equipped for home reading.

Reference books are found in the following order of frequency:

Dictionary	98%
Encyclopedia	95%
Handbook of Mythology and Fiction	85%
Atlas	75%
Dictionary of Qoutations	70%
Synonyms	66%

The magazines of general interest in order of frequency are: Literary Digest, Independent, Outlook. Magazines of specialized interest are: Scientific American, Popular Mechanics, Good Housekeeping, National Geographic Magazine.

Seventy-five percent of the teachers responding read the English Journal and regard it as their most valuable professional magazine.

Only 15% of the schools have a daily paper on file, a surprising condition in view of the growing belief in the value of news as school material.

Ten percent of the schools have collections of pictures for use in English classes. Thirty-three percent use a bulletin board for notices of recent books, news items concerning literary matters. Ten percent collect and file clippings from newspapers and magazines.

Certain questions of opinion elicited an interesting response. Ninety percent of the teachers answering think each student should own a small dictionary. Sixty percent prefer contemporaneous to standard material for home reading. Sixty percent prefer many different books to duplicate copies of the few found most serviceable. Thirty percent make use of magazines and newspapers for theme material or as class texts to illustrate the principles of composition. Among the collections of English prose and verse, in single volume editions or in sets, found most useful, are:

Newcomer and Andrews' Twelve Centuries,
Ward's English Poets,
Warner's Library of the World's Best Literature,
Gosse's Illustrated History of English Literature,
The Harvard Classics.

A number of teachers advocate the holding of laboratory recitations in the library itself, either under charge of the librarian or the regular instructor.

To sum up, the most serious needs in library equipment are trained librarians, more books, more periodicals, more contemporaneous material for home reading, and a better provision of reference books.

Art Equipment

Eighty percent of the teachers responding were of the opinion that a harmoniously decorated recitation room had an appreciable effect upon the student's work. Only one-third of them regarded their own rooms as so furnished. On an average, three pictures are all that a recitation room con-

tains. They are more often general in subject than related to literature. In the order of frequency we find:

Photogravures,
Enlarged photographs,
Lithographs,
Cheap prints.

The selection is generally left to the teacher, although one pessimist declared the arbiter in his own school to have been a blind man. Ten percent of the teachers change the relative location of the pictures from time to time. Seventy percent favor the use of inexpensive prints as tests on the plot of classics such as Ivanhoe. Forty percent collect and file such prints. Forty percent cut pictures from periodicals and mount them for eventual use in English class. Twenty-four percent encourage their pupils to paste illustrative material in their notebooks.

Only 14% report casts in the recitation room. Most of these are classic subjects such as the Winged Victory, Hermes, etc.

Only 2% are using stereographs as illustrative material.

The responses show a startling paucity of art material in our high school today. Aside from their practical value as an aid to English work, all pictures and casts have cultural value of the highest type. A student who spends five or six hours a week in the same room with Joan of Arc or Hermes is a finer boy at the year's end than he would have been without these silent influences.

The imperative needs as brought out by the questionnaire are intelligent supervision and selection of pictures by an art teacher, and more illustrations filed for use in the class room.

The Equipment of the Recitation Room

Here, again, conditions are unsatisfactory. The average English recitation room is too often a mere place for formal questions and answers, neutral and unattractive to a degree.

Ten percent still have the old fashioned platform at the front. In 85% of the rooms the teacher's desk is at the front. In 50% of the rooms, fixed desk seats are used. Procrustean instruments of torture; 25% of the rooms are equipped with immovable chairs with desk arms, 20% with movable arm chairs, and in the remainder, seminar method of seating around one or more tables is used.

Twenty-eight percent of the rooms have bulletin boards. Practically every one has a dictionary of the unabridged type. Ninety percent keep a supply of writing material in the room. In 30% of the rooms there is cross lighting and no artificial lighting. In 30% there is no means of regulating the temperature save by the window.

Devices to secure attractiveness are hardly known. Sixty-five percent have no color scheme. Curtains, plants, a library table equipped with current books and periodicals, collections of postal card views, a library corner with a rug and a few easy chairs, all these exist in so few cases as to be negligible.

The conclusions upon recitation room needs are obvious. The new recitation room must be a living room, a place for informal work, consultation, and pleasurable reading. Both the teaching of composition and literature may be socialized in such a room, and if the boy emerges loathing Shakespeare and incapable of a creditable letter, at least the fault will not be due to environment.

Comparative Estimates

The very small and the very large school alike make a poor showing. In the former, there is a lack of equipment itself, in the latter, a lack of quantity of equipment and enforcement in use. The number of teachers is too small in both to teach English in the personal and truer sense of the work. The larger schools would benefit by a uniformity of procedure, that would eliminate unnecessary work for the teacher in correction, for the pupil by doing away with duplication and over lapping in his various subjects. The smaller schools should expend more money upon periodicals and use them as class material. The larger schools should enforce the use of the many periodicals which their libraries contain. The smaller schools should attempt only simple dramatization because more ambitious efforts demand greater facilities than they can afford. The larger school, however, should not neglect informal dramatization because of the social and imaginative training to be derived from it.

Essential Needs in the Equipment of Any High School

1. A recitation room exclusively for English.
2. A small stage with curtains, dressing rooms, etc.
3. A file for themes and other records.
4. Maps of England, America, and Europe.
5. Loose leaf notebooks.
6. A projection lantern or stereopticon with slides.
7. A victrola.
8. A duplicator.
9. A working library supervised intelligently.
10. Three magazines of general interest, four of technical nature, a daily newspaper.
11. A serviceable collection of books for home reading, at least one-fourth of contemporary authorship.
12. Several copies of the more useful reference books and one copy of the less valuable.
    (See list in questionnaire.)
13. Filed pictures for illustrative class use.
14. A few attractive pictures for wall decoration and a few casts.
15. Writing materials in the recitation room.
16. Informal seating arrangements.
17. Devices of various sorts to make the recitation rooms attractive places for recitation, conference and reading.

In conclusion, I would thank the seventy-one teachers who so conscientiously answered the questions sent out to them. I am aware that figures are fallible, that many of the conclusions I may have drawn from them are conse-

quently groundless. Two things, however, came out surprisingly; first, the poverty of the English department's equipment as compared with the other departments; second, the heroic efforts teachers are making everywhere, in spite of poor equipment, to get down to essentials and socialize English training.

What has been accomplished has been accomplished in spite of obstacles. With the removal of such a fundamental deterrent as poor equipment, may we not hope for our English work a concrete accomplishment both in compositional ability and appreciation of the literature as a social force?

Mr. Woolbert of the University opened the discussion that followed by asserting that our English teaching is too abstract, and that it ought to be made more concrete. The boy who dislikes Shakespeare does so because the teacher makes the poetry seem abstract; hence the value of school dramatics, and the justification for an adequate equipment for appealing to youth through the eye and ear—the only ways in which any impression can be made upon high school boys and girls. Miss Alice Bidwell of Rockford thought the importance of equipment in danger of being overestimated; and pointed out the need of differing equipment for classes in composition and classes in literature. Professor Paul said the lack of equipment was at least in part the fault of the teachers themselves in that they too often failed to make definite requests of school-boards. The teachers were then exhorted to visit the Auditorium to inspect an exhibit of library equipment for high schools; whereupon the session promptly adjourned.

The afternoon session began on time with a business meeting. The secretary's and treasurer's reports were read. The election of a delegate to the coming meeting of the National Council was referred to the executive committee. The nominating committee reported as follows: for president, Professor J. M. Clapp; for secretary, E. C. Baldwin; for treasurer, Miss Kathleen Roberts; as members of the executive committee for one year, H. G. Paul (Urbana) Miss Florence Skeffington (Charleston); for two years, Miss Simonson (DeKalb) Miss Stella Kleinbeck (Murphysboro); for three years, H. Adelbert White (Galesburg) W. W. Hatfield (Chicago) Miss Eva Mitchell (Bloomington) B. C. Richardson (Alton). These nominations were seconded and voted upon affirmatively. It was then voted that the chairman of the executive committee should be empowered to select two other members of the executive committee, the three to form a "steering committee," the purpose of which should be to simplify the work of the executive committee by making it unnecessary, in order to transact business, to call the whole committee together. The

Association passed a vote of thanks to Miss Skeffington for her untiring and devoted work as chairman of the executive committee. After the disposal of this business the session then proceeded to the reading and discussion of papers.

The first paper of the afternoon was that of Miss Isabel McKinney of Charleston "On Correcting and Grading Students' themes." The paper follows:

An Experiment in Grading Students' Themes

At the request of the executive committee, an experiment in grading themes has been begun this fall. It was thought best to confine this experiment to ninth year work; and, as a preliminary, certain minimum essentials in form, essentials for passing ninth year work, were formulated. The list agreed upon, including only the most elementary matters of good form, was furnished to each critic. During the third week of school this fall all students in tenth year classes were given the same assignment. The resulting themes, eighty in number, were turned over to one instructor, who selected eighteen typical in range of excellence. These eighteen themes were then separately ranked and graded by six critics, all teachers of English in the same school. In the results the variations were so great that a brief account of them would be impossible. Three critics each graded four themes below passing, but not the same four. Two others graded only one theme below passing, confessing afterwards that they would have liked to mark others down but thought that they were not supposed to do so. One critic marked seven themes below passing; this critic has not taught ninth year work. Several critics admitted that they ignored the list of minimum essentials. The grades of one theme ranged from 50 to 87, of another from 58 to 89. The ranking was as varying as the grades. However, one theme was graded four times 75, once 76, and once 78; one theme was ranked three times first, and twice second; and one theme was ranked unanimously last. From the eighteen themes seven representing the median of ranking have been chosen as a sample set of ninth year themes. When several themes were ranked together by the median, the one of least variability in ranking or grading was selected. With this set of themes in hand, and with the list of minimum essentials definitely presupposed, it is now in order to repeat the experiment.

The results so far make clear, if anything were needed to make clear, the unfairness and the futility of grading themes in figures—the vaguer the symbol of appraisal, the better. The only grade of really great importance to the pupil is the passing grade; and doubtless the great diversity of judgment regarding the work of a certain student would be modified if his whole series of themes for a term were passed in review. The questions left by the experiment so far are chiefly two: 1. Is it worth while to attempt to formulate a list of minimum essentials in form for each year's work, and to insist upon absolute mastery of these essentials not only in theory but in practice in every theme prepared? 2. Is it worth while to work out a sample set of themes for each

year? The critics who are making the experiment have agreed that so far the most helpful feature of it has been the discussion of *why* this or that theme was placed here or there. If so, it would seem that the experiment is at least as useful as its deposit, and that each school or system might perhaps profitably work out its own standards; although, especially in the smaller systems where there may be a dearth of good material, other people's standards are useful for comparison. Whether greater uniformity can be attained remains to be seen; doubtless complete uniformity is as impossible as it is undesirable.

Though the foregoing paper adequately states the conclusions drawn from the experiment described, it does not do justice to the interest attached to the presentation of the paper at the Conference. In that instance a considerable amount of illustrative material was placed in the hands of the listeners, who were thus enabled in a sense to repeat for themselves the experiment under discussion. Of this illustrative material space forbids the inclusion of more than the list of minimum essentials referred to in the first paragraph of Miss McKinney's paper. These were as follows:

Minimum Essentials. Ninth Year

Indentation of paragraphs
Margins
Periods at the ends of sentences
Capitals at the beginnings of sentences
Capitals for proper nouns
Avoidance of amputated members of sentences; i. e. clauses and phrases written as sentences
Avoidance of gross disagreement; e. g. objective case as subject
Correct spelling of:

1. to	11. lose
2. too	12. loose
3. two	13. chose
4. their	14. choose
5. there	15. which
6. all right	16. dining
7. already	17. whether
8. until	18. together
9. develop	19. grammar
10. separate	20. declarative

The paper was discussed by Miss Robey of Danville, and by Miss Skeffington of Charleston. Both expressed scepticism about the

possibility of arriving at any uniform system of grading, yet expressed the hope that we might eventually reach an agreement upon certain minimum requirements, which should become pre-requisite to the giving of credit in composition.

Professor Peterson of The Crane Junior College, Chicago, after an apology for introducing a topic not obviously connected with the matter in hand, spoke at some length upon the desirability of emancipating the teacher of English composition from the unreasonable exactions of obdurate school-boards. He contended that the teacher should never be expected to do work in grading themes outside of school hours, unless such over-time work were stipulated in the teacher's contract. After describing his own experience in convincing his superiors that such exactions were fatal to scientific, and even to ordinarily effective, theme-correcting, he explained how at present, by concentration and by systematizing his time during school hours, he now deals with 300 themes per week spending upon each composition an average of two and forty seven hundred and twenty nine ten thousandths minutes.

The final paper of the afternoon was presented by Mr. Sibley of Lake Forest upon Improving the Speech Habits of Pupils. The paper follows:

Improving the Speech Habit of Pupils

The Committee on American Speech has published its first report in the November number of the English Journal. Some of you have read it; will you, nevertheless, let me give an outline of it as the basis for my talk to-day? At the outset perhaps something should be said of the origin and organisation of this committee. The idea of such a body originated, I dare say, in the thought that in our progressively successful study of oral composition, very much more attention has been paid to the substantive than to the adjective—much more to the rhetoric than to the voice. Accordingly the Committee on American Speech was authorised, last November, by the National Council of Teachers of English.

By those most active in the movement it was believed that the committee should be made up not merely of teachers of English but of representative men and women in such other businesses as would insure their interest in voice cultivation—of teachers of foreign languages and of singing, for example, and of actors, public readers, publicists, dentists, throat and lung specialists. Such a committee would needs be large and loosely organised; such a committee has in fact been organised with Professor Scott of Michigan as Chairman, Professor Clapp of Lake Forest as Vice Chairman, and Professor Lyman of Chicago as Secretary. Sub-committees of at least three kinds will be necessary—one for publicity, one for the collection and distribution of bibliographical material, one for the investigation of particular phases of the problem.

But what, more definitely, was the purpose which led to the formation of the committee, and what is the intention of the committee now that it is formed? Not, certainly, to hunt for a panacea, not to further a propaganda for any one system; rather the hope was to bring into mutual understanding many groups of the people who care about good speech, and to furnish a basis for the active co-operation of all such people in each community.

The direct contribution which this programme asks of the schools is three-fold: it is, first, good instruction in reading aloud; secondly, training of ear and voice through good instruction in music, especially singing; thirdly, training in fluency and correctness of speech in the oral exercises of *all* classes in school. "Good" instruction in reading and singing does not mean conscious attention to the technic of voice production on the part of most of the pupils; it does mean a pervasive, continuous, and increasing realisation by them of the results the teaching is aiming at. These results are not exhibitions of vocal virtuosity. Indeed formal contests and "show" speaking and singing are not encouraged. The principal result to be sought is good *tone*—quiet, pleasant, clear, distinct tone; when this is secured, attention may be turned to pronunciation, dialectal and local, to variety of inflection, to niceties of enunciation and pitch.

But before the instructor can hope to improve the voices of his pupils he will have to be sure that his own speech is reasonably good. In this matter, at any rate, young people are very unlikely to follow the precept instead of the practice of their elders; teachers who shout, gabble, mumble, drawl, or whine, may fairly expect that their pupils will use their voices in similarly uncouth fashion. The committee, in fact, goes so far as to express a pious hope that the day is near when none who misuse their voices can qualify as teachers of English.

This, in brief, is the report of the committee. What are, for us, the outstanding features of it? What are the most important practical suggestions for us to carry out? Well, the programme of the committee includes three things with which we might very well begin. In the first place we can try to interest other grown people in this matter of good speaking—other teachers, but especially people other than teachers in the communities in which we live. It is true that we are all touchy on the subject of our way of speaking; we resent criticisms of our voices as we resent criticisms upon our clothes and manners. But this very sensitiveness implies, I think, a genuine interest in the matter under criticism. When Mr. Henry James ventured to criticise the voices of American women, a few years ago, his words were taken up and commented on from one end of the country to the other. In England, though Dr. Robert Bridges has declared that English pronunciation is on the road to ruin, the character of one's speech still retains some social significance; cultivated speech is a mark of good social position. In this country, generally, it has not been so; no one would dream of differentiating the fashionable Four Hundred from an equal number of guttersnipes by the quality of their voices—except, to be sure, that the soft-spoken immigrants from southern Europe "put it all over" the shrill or harsh voiced sons and daughters of the Puritans. Is it too much to hope that the day will come when in America pleasant speaking will be raised to a place of distinction—will be reckoned, to put it baldly, a social asset? Does the expectation

seem fanciful? Certainly we shall not expect our school teachers' campaign to produce appreciable results in one generation. But it should be possible to convince parents that an agreeable voice it at least as important as decent table manners, if good breeding includes an agreeable use of the voice. Such countenance, on the part of the parents, of what we are trying to do, will help a good deal. Let it be remembered that some excellent authorities assert children in nine cases out of ten have naturally beautiful voices; only, these voices deteriorate gradually as their owners are exposed to this shouting, shrieking, hustling world. Given half a chance, Nature herself will preserve some of these pleasant voices.

Furthermore, if the sympathy and intelligent co-operation of parents cannot generally be counted on at present, the agitation of our subject in every community should still be worth while. School boards are responsive to outside opinion; the interest of even a few influential citizens can secure for the teacher time, opportunity, encouragement, and even equipment for voice training.

This brings us to our second and third points—the things we can at once do in the schools. We can take the oral reading more seriously than we have taken it; we can grade it as rigorously as we grade any other subject. In a little book called Clear Speaking and Good Reading, written by Arthur Burrell, published by Longmans, Green, and Company—a book which without asking the sanction of the committee I have no hesitation in recommending—is an admirable chapter on "The Reading Lesson". Therein Mr. Burrell sets forth the following nine rules for good reading:

(1) Go slowly.
(2) Be distinct, but quiet.
(3) Bite on the last letter; or speak on the block system; or get a difficult sound away before another follows.
(4) Keep the eye ahead of the voice, especially when a page is to be turned.
(5) Don't hold the book in front of the mouth.
(6) Don't sprawl or lean forward.
(7) Don't laugh at the jokes in the book.
(8) Keep the room quiet by being quiet yourself.
(9) Pay no attention to commas, semicolons, or full stops, but pause whenever you see a picture.

No one will pretend that the essentials of good reading must be formulated in these particular rules; no one should say that these rules are all of equal importance. But at all events there is no one of them which requires an intelligence or a familiarity with vocal technic beyond what each of us can bring to bear upon the reading lesson.

The second rule also contains the innermost gospel of tone production. Nine times out of ten, with children of high school age, the tone that is quiet and transparent is a good tone; pronunciation may be wrong, ennunciation not clear-cut, but the quality of the voice will be agreeable.

These two things, then—stricter attention to the reading lesson with an application of some such tests as Mr. Burrell proposes, and insistence upon good tone not only in reading but in all recitations—these two things we can begin

upon at once. An entertaining field remains to which I can hardly do more than indicate some approaches. Some years ago the Headmaster of Stratford Grammar School told me that the principal fault in the speech of his boys was local or family peculiarities of pronunciation. Excepting, possibly, from those of you who teach in towns of a large foreign population, I should not expect your testimony to be the same. For reasons we need not detail, not many strongly marked dialects have appeared in our country. Yet those of us whose pupils have lived in different sections may get much innocent amusement from studying minor differences of pronunciation. I think I can almost invariably spot the youth from a Mississippi River town by his confusion of *ar* and *or*—*far* and *for* are both alike for him; the Hoosier damsel lives in a *haouse;* the Buffalonian and Baltimorean who speak of *w'ite* and *w'ich* and *w'eel;* and of course the Southerner with his *cyards* and the Plainsman with his *ben* for *been*.

The principal criticisms that foreigners make of American speech are, however, of a different sort; they accuse us of droning and monotoning. By the latter they mean that we use our voices within too narrow limits of pitch; we seldom rise very high above or fall very far below the dead level of our ordinary voices. Compare the surprising range in the speech tunes of an Englishman! You will find a sprightly comment on our respective habits in this regard in the Contributors' Club of the Atlantic for August, 1911.

By droning is meant our national habit of stressing our words evenly; we say sálvátion, úníted, Saínt Jóhn, where the English say salvátion, uníted, St. Jóhn. In the article previously referred to, Dr. Bridges ascribes what he calls the ruin of English pronunciation to the degradation of unaccented vowels; unaccented vowels in English speech, he says, all alike tend to assume the easiest of all vowel sounds—the sound of *u* in *but*, of *er* in *danger*. The danger of this degradation must be guarded against, to be sure, but even our teachers of foreign languages, who exclaim most bitterly against the impurity of American vowel sounds, would not profess that the danger is a lively one in America. They themselves—especially the teachers of Latin—can do much to prevent this degradation by insisting on the scrupulous pronunciation of unaccented vowels in foreign words.

In conclusion, it seems to me that our thanks are due to the Committee on American Speech not least because of their attitude towards the whole problem. They have recognised that speech is a common art, not a specialists' science. That, too, should certainly be our attitude; the study of speech is among the important 'humanities'.

After some discussion of the foregoing paper, and upon the motion of Professor Paul, seconded by Mr. A. F. Trams, the session adjourned.

To those of us who recall the comparatively dull English sectional meetings of a decade ago, where the perfunctory papers were listened to with tolerant apathy, the really vital papers, and the eager, intelligent discussions of the seventh annual meeting of the Association were indeed an exhilarating contrast.

EDWARD CHAUNCEY BALDWIN, Secretary.

Geography Section

MORNING SESSION

The session was called to order by the presiding officer at 9:30 A. M. Marlow D. Grose, of Joliet Township High School, was selected as secretary pro-tem.

Dr. Rich: "The committee on Geography teaching, appointed by this section last year, in keeping with the purpose for which it was appointed, has prepared the day's program with the object of bringing about a discussion of the relative suitability of the "New Geography" as compared with Physiography as the introductory high school science."

The chairman then introduced as the speaker to open the discussion, Mr. James H. Smith of the Austin High School, Chicago, who spoke as follows upon the subject:

Why I Prefer the New Geography to Pure Physical Geography for High Schools

A teacher who has a grasp of his subject, who understands children, and who has teaching vitality will achieve success by any method, with any text-book. Conferences in planning their courses need not take him into account. But it is of great importance to arrange the work so that the average teacher under average conditions will find the course of study and the text-books of the greatest possible assistance to him.

With a view of making these conditions helpful in the field of geography I desire to state and briefly discuss the following four propositions:

I. Each succeeding generation has new problems in life and in education.

II. During the past fifteen years high school education has fallen far short of meeting the demands of the times.

III. The times demand a closer contact between the life and experiences of the child and his work in the school.

IV. The content of the new geography in high school furnishes more numerous and closer points of contact with the life and experiences of the pupil than did the more technical physiography.

Concerning the first proposition but little need be said. The independence which is characteristic of a person in the adolescent period of life is a claim for the right of the individual to look at life's problems from his own point of view, and to solve them by his own methods. So also do the aggregated lives of one generation endeavor to work out solutions of the problems that seem to that generation to be of paramount importance.

My second proposition states that the high school has fallen far short of the demands made upon it. This does not mean that the high school has been a failure; very far indeed from that. It has been a most potent factor in the ele-

vation of the human race, and as a people we are under great obligation for its benign influence upon us. But many pupils have flocked to its doors only to turn away after a short time, disappointed and discouraged. Frank P. Bachman, committee on School Inquiry for New York City, found that "in the country as a whole in 1907-08 42.26% of all high school students were in the first year, 27.16% in the second, 17.85% in the third, and only 11.73% in the fourth."[1]

Or, taking Cleveland, Ohio, a city far above the average in respect to high school attendance, for a period of ten years it was found that "one child out of every three entering high school withdraws before the second year, one out of two drops out before becoming a junior, and two out of each three entering fail to graduate".[2]

We may not charge all of these failures to persist in the higher education to the faults of physiography, nor to any other single cause. There are many elements which contribute to this dire result. But since physiography has occupied about one-fifth or one-fourth of the attention of most of the pupils during one year (usually the first) it must assume its share of whatever blame there may be.

My third proposition states that there is a demand for a closer contact between the life and experiences of the child and his work in the school. This is the natural relationship which should exist between the home part and the school part of a child'e life. In early, rural days this was the case in great measure, and doubtless still persists in rural communities; but the drift of the population has been to the towns and cities, and the teaching has become too didactic and theoretical. The demand for utility courses, practical applications, hand work for boys and girls, laboratory experiments, etc., indicate the trend of thought in the field of education in this the second decade of the twentieth century. Mr. Bachman expresses this by saying that arising from the situation confronting high schools there is a demand that "all that has to do with the schools and its work be suited to the abilities and needs of the many, rather than the interests and capacities of the few".[3]

Superintendent Edwin C. Brown, East Orange, N. J., gives as one cause of the dropping out of high school the "Traditional courses of study which fail to satisfy the personal needs of pupils".[4]

A similar thought is expressed by the Central Association of Science and Mathematics Teachers which in 1912 adopted the following resolution:

"That this Association cordially approves the efforts being made to vitalize the instruction in science and in mathematics by making the work more concrete through the study of problems arising in every day experience and practical processes which are closely allied to vocational work."[5]

Having considered the foregoing propositions it will be necessary in the fourth and last, only to establish the fact that the new geography fulfills the needs of the time in which we live. It is less technical than the physiographies.

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[1]Education, Vol. 34, Page 409.
[2]Idem, Page 410.
[3]Ibid, Page 411.
[4]Education, Vol. 35, Page 13.
[5]Proceedings of twelfth meeting, p. 25.

Its vocabulary is more nearly that of the general reader. Many of the minor subdivisions of topics are omitted. More applications of a practical nature are included. More things are given which directly or indirectly influence the life of the pupil. As a result of the method of treatment the matter is comprehended with less difficulty than it was in the earlier text-books. No geography text for high schools has yet to come under my observation that is sufficiently elementary for high school pupils in the first year.

A few examples will make clear the changes in treatment. I shall quote only from elementary text-books. In a volume published in 1908 we find under minerals and ores, quartz, ortholose, plagioclose, Muscovite, Biotite, hornblende, augite, calcite, dolomite, kaoline, hematite, limonite, magnetite, iron pyrites, siderite, chalcopyrite, galena, sphalerite, franklinite, zincite, Willemite, bauzite, cryolite, corundum, halite, gypsum, alabaster, sulphur, graphite, talc, magnesite, apatite, fluorite; and many kinds of rocks.

But few of these are mentioned in the new geography.

In a book by another author, also published in 1908 we find in detail the work done by running water—all about what a river does, but with very little about the effect of this work upon the welfare of the human race.

As abstract information the high school pupil cares but little about how a river gets its loads, erodes its channel, or makes its flood-plain.

But in a new geography published in 1913 we are given a brief account of river work. When the pupil reads that the Mississippi River carries 1,000,000 tons of rich soil to the Gulf of Mexico every day he realizes that a part of the loss is his. After he has learned that the United States loses $500,000,000 per year in soil erosion, then he is interested in ways of preventing erosion. When he is told that the history of his country is closely connected with flood-plains, he becomes interested in the processes by which flood-plains are made and destroyed. When he learns that the San Francisco earthquake in 1906 was but one hitch in the crustal movements of the earth, at that moment he becomes interested in these movements. In general when he sees the application of the processes of nature and their influences upon the human welfare, he ceases asking, "What is this subject good for?" and begins to realize that geography is one of the most fundamental and far-reaching, of all subjects, upon whose principles and products the progress of the world in a large measure depends.

In conclusion I would not have it understood that I consider pure physiography a useless subject. When properly taught the teacher supplements the text by applications and illustrations bearing upon local conditions. The average teacher under average conditions will not do much of this. The older type, physiography, leaves these applications in the background, the new geography pushes them to the front.

Discussion of this paper, by general consent, was postponed until after the presentation of the second paper of the morning. Accordingly the chairman introduced Mr. William E. Andrews, Principal of

the Township High School, Pana, Illinois, whose paper was on "Why I Advocate the 'Old Line' Physiography for High Schools." Mr. Andrews spoke as follows:

Why I Advocate the "Old Line" Geography (Physiography) for High Schools

I. Not Different but more Geography is needed in the High School.

The desire to give to geography, in the high school the place to which its merit entitles it, prompts maintaining the physiography year-course now recognized: and in addition advocating one or two additional year-courses in Geography. To displace a considerable part of the physiography that is now upon the high school program of subjects with portions of an additional course, also in geography, does not promte the cause of Geography in the high school. Introduction of geography by crowding out geography is not an advance. Those who appreciate the educational value of geography should seek to establish in each high school of warrantable size, a department of geography co-ordinate with other major departments. A year-course in physiography for the ninth grade is the best introductory course for such a department to conduct. A tenth grade year-course in human relationship to geography, incorporating the special features of the "New Geography" and working out, in a technically competent way, the subject matter in geography that is now done incidentally, through the outline-map-work appendage of the history department, could be made a most important feature in the high school program. At least one more year-course in geography is necessary to give adequate instruction in this subject. This year-course seems best to be developed about the core of Commercial and Economic Geography.

It is, therefore, easy to see why we should advocate advance by addition, and oppose substitution, with no substantial gains for geography, in the program.

II. *Physiography is an Achievement—the Results of Years of Development of a High School Year-Course.*

Mr. Andrews declared that the organization of the course of physiography, the production of tests, the development of equipment, and the production of government publications, and library accessories were achievements too valuable to be disregarded.

III. *The time is now here for the expansion of geography in the high school without sacrificing the gains already made.*

The speaker by taking Botany and Zoology as examples, urged the expansion of geography. He showed how Botany and Zoology has expanded in many places by having additional courses under the name of Agriculture thus increasing their place in the curricula. Let geography also demand a larger place for itself.

IV. *More Stability of Content Guarantees Better Training of Special Teachers.*

Mr. Andrews next pointed out the need of teachers trained to teach geography and showed how much easier it is to train teachers if the present stability of content is maintained.

V. *Physiography is more Scientific and on the whole more valuable.*

Another reason for maintaining the present content is: The present subject matter has more value in furthering scientific training. The reasonings involved in human relations lack the definiteness and reliability requisite for profitable service in interpreting situations. A notable istance is the diverse interpretations based on the fat-content of the food of the Arctic peoples.

For two years observations have been made upon this uncertainty in interpreting human relations while using Herbertson's "Man and His Work" with sixty ninth-grade pupils. The lines of thoughts often are found to be conjectural rather than scientific. Certain conclusions fructify upon one line of interpretations of cause and effect to be discovered erroneous when the approach is along another line seemingly equally valid as reasoning. It is doubtful whether this wavering of values in the currency of reason promotes economically scientific habits of mind. It would be easy to demonstrate that much sophistry would pass current for scientific reasoning. Our high school youths are naturally in the epoch of the logic-chopper. The stage costumes of the sophists have a primitive charm. To improvise lucubrations is instinctive with them. In the special field of ethics the reasonings of high school pupils are profoundly unscientific, illogical, and sophistic. Every principal who has sought to get his pupils' point of view regarding discipline has unmasked this pronounced trait. The human relations conceal the scientific. In encouraging the free play of intuition, conjecture, meditation, and speculation, the type of training is not scientific. Compare the two items of subject matter: (1) How a Stream Constructs its Channel into a Fully Developed River-Valley and (2) The Uses of Streams and Lakes. Or, more in detail, contrast (1) How a meandering stream forms a valley flat with (2) The causes of decline of river navigation. In the one there is a line of causation definitely within the comprehension of the pupils; in the other there is a complexus of co-operating influences and wilful combination to obstruct river traffic: all of which evade classifying according to any princple of science.

VI. *Physiography is now confronted with a possible rival in general Science.*

Why oppose it also with general geography? Any additions to the ninth-grade year-course that break up the present unification attained in physiography will be a backward step toward the former unevenly balanced and faintly articulated subject matter of the earlier years. It is well to hold fast to physiography and concert activity that will win farther recognition in another year-course.

VII. *Physiography is a Necessary Foundation for any Scientific Work in Human Geography.*

Not only does physiography in the ninth grade provide a competent and most admirable consummation of the geography studied in the grades below, but also establishes indispensable preliminaries for subsequent courses in geography. Particularly is this physiographic foundation necessary for consistent study of

human geography. A clear view of this occurs, in a miniature fashion, when the physiography pupils pass from a study of deposition of glacial drift to the effects of this upon human affairs. The writer has just this week intimately scrutinized this primer-like sally from physiography into human relations in the specific detail mentioned above. It is evident that physiography, if intesively done, lays the necessary foundation for extensions into human geography.

In conclusion, then it seems wise to preserve physiography as the best introductory year-course in geography in the high school; to work toward gathering up the fragments of geography attempted in the several departments and, with well organized year-courses, do at least two more years of work in geography; to build this up into a department, in all possible cases, in order to give the subject due recognition and to guarantee merit in teaching.

If this section of the conference is able to promote this, great credit will be due it for so valuable contributions to high school education.

General discussion following the reading of the papers: The first speaker in the general discussion which followed indicated that her experience covering both physiography and general science showed that the latter was too much of a medley to serve as a suitable substitute for the accurate scientific training afforded by the former.

Mr. Andrews: "General Science like the new geography, as I see it, is an appeal to human interest. Since there is a great need in daily life of scientific training, in properly guiding the stimuli given by human interest, I maintained that physiography is the best tool to that end."

Mr. Smith: "There are obviously not many fundamental differences between Mr. Andrews and myself in our positions, but the question of scientific or unscientific attitude in the matter of human interest in the teaching of physiography depends upon the manner of presentation. It is unwise to eliminate human interest from physiography teaching. It is our business to guide it and conserve it into vigorous, right-directed activity. Mr. Andrew's proposal for a more extended course is one that merits serious consideration."

Mr. Cox of Lawrenceville: "Is it not futile for us to discuss, at the present time, a three years' course in geography? More than half the schools in Illinois have only half year courses and many others are introducing general science in the place of physiography. We should devote ourselves to trying to get established one full year's work."

Miss Fuller of Centralia: "Those of us who are restricted to a half year course in physiography find it difficult to do an adequate

amount of scientific work properly. Time will not permit us to introduce much of the human element. A longer course seems essential."

Mr. Smith: "The call for a longer course merely emphasises my contention that the application of physiography to human relationships vitalizes the course. My experience—and I too am confined to a half year course in geography—indicates the possibility and the value of such work in teaching."

Mr. Rich: "Certain classroom experience indicates that such a teaching method results in a loss of a scientific attitude."

Miss Carmen: (A former student in course referred to by Mr. Rich): "My experience as a student corroborates the statement just made."

Further discussion of an informal nature indicated a general agreement that human relationships should be made a part, but rather an incidental part, of the work in physiography.

Mr. James H. Smith and Miss Fuller were appointed as a nominating committee to select two candidates to fill two vacancies automatically created in the executive committee.

Mr. Smith speaking for committee reported as follows: "Your committee has nominated Mr. F. W. Cox, of Lawrenceville, to succeed himself, and Mr. W. E. Andrews, of Pana, to succeed Mr. H. W. Clem of Chicago."

Upon motion the candidates were unanimously elected.

At the afternoon session Prin. W. L. Goble, of the Elgin High School, presented a paper on "Physiography as an Aid to the Understanding of History."

Mr. Goble stated that the method of teaching both geography and history should be changed in such a way that the connection between them and the dependence of history upon geography should be brought out in a vital way. He then gave as follows a number of examples of the influence of geography upon history he continued thus:

How many of us have any geographic facts to explain the general attitude of the Belgian people towards England and Germany. The people are about half of German descent and half of French descent. They speak German and French languages, but England is their ally. They have linked their fate with that of England since before the hundred years war. I suspect it is mainly because of the fine river harbors and transportation facilities that busy cities sprang up and engaged in manufacture and commerce of the same kinds as those carried on in the nearby English cities, and depended upon the English markets for the

raw materials like cotton. Their industries would suffer with those of England in case of war. So they became allies of the English and remain so.

We are struck by the evident lack of unity now in Austria-Hungary. We know that the states of the empire have not coalesced or come into unity. If we note that Bohemia is a plain surrounded by mountains, that Morovia is likewise set off by itself, that Hungary is also, and that a diversity of topography breaks up the whole empire and keeps the people from mingling we can appreciate the lack of unity. Dr. Steiner comments on the fact that over in America the emigrants from these peoples that will not fuse over there are put to work side by side or make their homes on adjoining farms and with a unity of life and interest soon forget their different lineage.

We are inclined to wonder why the Balkan states which are now in their fourth devastating war since 1911 can't keep out of this war. Albert Bushnell Hart says, "the implacable cause of the present war is the geographical situation of the Balkans——. It is associated with the history of that tremendous struggle between Europe and Asia which has lasted in one form or another since Xerxes came gorgeously marching to destroy those penitent Greeks and put an end to European civilization. The country has been overrun by Greeks, Persians, Slavs, Romans, Bulgars, Turks, Hungarians, Russians, Austrians, and now by the Germans. It is a terrible misfortune to the Balkans to lie on the world's easiest highway from the interior of Europe to the interior of Asia. It has brought woe and destruction to it to be for ages the frontier land of Europe."

The average high school graduate has studied the geography and also the history of Great Britain without knowing why we must still speak of England and Wales, Scotland and Ireland. The separation, which is about as marked as if they were each islands, and the diversity of life, occupation and interest, does not stand out in his mind with any special significance.

Coming to America where we are on more familiar ground both in geography and history we find numberless fine examples of determinative geographical influences operating on a large scale and generally recognized and taught more or less by all teachers of geography. Among them is the relief, soil, climate, rivers, harbors, etc., of New England and the consequent occupations of the people, the broader and more fertile valleys and plains of the states farther south and the consequent plantation life and cities and few villages; the Appalachian Mountain system as a barrier against the extension of the colonies westward; the great valley of the Mississippi with its matchless soil and climate; the great lake system; the western plains; the Rocky Mountain system; the great basin, etc.

He then gave carefully the familiar example from Mr. Brigham's "Geographical Influences in American History" of the influence of the Hudson-Mohawk gateway upon American history, concluding thus:

The cities that sprang up along the Mohawk valley offer fine "illustrations of physiographic control. Cohoes, Schenectady, Syracuse, Little Falls, Utica, Rome, Oswego, Albany, Buffalo and other cities were severally determined by physiographic conditions along this gateway.

It would be iteresting if we had time to consider definitely the determining physiographic facts in the location of these and such cities as Cleveland, Detroit, Milwaukee, Duluth and Chicago.

It is of more importance, however, if we grant the principle to discuss the matter of its application. The most of the history our young people get is studied before they come to any appreciation of physiographic control of history. They get the study of history often before their study of physiography, and many never study the latter study.

The remedy lies in a better teaching of general geography. The place idea still controls too largely. The idea of relations is not prominent enough, especially in the upper grade work in the subject. The geography and history may be very profitably coordinated.

At the close of the discussion of Mr. Goble's paper the presiding officer introduced Miss Mabel C. Starts, of the Department of Geography, State Normal University, Normal, Illinois, who presented the plans of the Illinois Section of the National Council of Geography Teachers, and bespoke the support of the present Session for the movement, which has for its object the coordination and extension of geography teaching in grade, secondary, and higher schools.

Mr. Smith: Moved that this Session express its hearty approval of this movement. Seconded by J. W. Large, Joliet (Illinois) Township High School. Motion carried.

The second paper of the afternoon's program was Report on the Testing of the High School Syllabus for Physiography by Dr. John L. Rich.

In order to test the extent to which the Physiography Syllabus, prepared in 1913, is being used in the schools, and to gather suggestions for is revision, in case that seemed desirable, a questionnaire was sent out to nearly 200 schools.

Though the number of replies was small, the following facts stand out clearly: (1) Physiography in the large majority of schools is taught as a half year subject. (2) The existence of the syllabus seems to have been known to only a few teachers; (3) There is no general agreement as to desirable modifications; most of those who have used the syilabus seem to consider it satisfactory. (4) The present problem is not the modification of the syllabus, but its more thorough introduction into the schools; to at least make its existence known to every teacher of Physiography in the state.

Discussion of the report and the syllabus brought out first that the geography section has confidence in the value of the syllabus;

second, the belief that the reason the syllabus has not been used more is because it was printed in the volume of the Proceedings of the Conference and thus was lost in the bulk of the Proceedings.

Mr. Grose (Township High School, Joliet): Moved that it be the unanimous request of this Section that, if such procedure is in order, the Syllabus shall be published as a University Bulletin, after revision by the Committee, in order that in such a way it might be made available to the geography teachers of the state. Seconded by Mr. Andrews of Pana. Carried.

Mr. Smith: Moved that the Syllabus be referred to the Executive Committee for revision preliminary to publishing. Seconded. Carried.

Mr. Andrews: Moved that the Executive Committee be authorized to complete a mailing list of live geography teachers of the state for the use of the Conference. Seconded by Miss Starts of Normal. Carried.

Mr. Cox moved that a Committee be appointed to request the State Superintendent of Public Instruction to add to his annual school directory, the subjects taught by each. Seconded by Mr. Andrews. Carried.

The Presiding Officer: The Executive Committee will name this Committee at later date.

No further business arising, the Session adjourned same date.

Manual Arts Section

The morning session was held in the Wood Shop lecture room, from 9 to 12 M., Miss Anna G. Brown, Supervisor Manual Training, Jacksonville High School, presiding. Professor E. J. Lake was appointed secretary. There were fifty in attendance.

Miss Anna G. Brown welcomed the assembled teachers. Following the usual announcements of the various meetings of the Conference the program, as arranged, was presented.

L. Day Perry, Supervisor Manual Training, Joliet, Illinois, presented a paper on the subject "Presenting a Typical Problem," the text of which was essentially as follows:

The method by which a given problem is presented to a class is an important factor in the successful completion of that problem. Perhaps a great per cent of poor work may be directly attributed to poor presentation, which

leaves a doubt in the pupils mind as to how to proceed with each successive step. At times a pupil does not know the name of the articles he is constructing. The practice which gives to the boy a piece of wood with instructions to square up to certain dimensions for "*a* cross rail on *a* table" cannot be justified. With definite progressive steps outlined, and sequence well planned, the boy may undertake his work with the maximum of assurance. He may then make *the* cross rail on *his* table. His work is then well planned, the steps are tangible and clear, and he may work intelligently.

Selection of Design

We will here understand that the boy concerned is a pupil in first year high school. His problem is of the selective type. His initiative needs to be developed. He may have very definitely in mind the type of article he wishes to construct. Usually he has not. The right kind of suggestion from the instructor is necessary before any definite response comes. The spirit of imitation in the class is a factor with which to deal, for generally inasmuch as the class as a whole has no idea of a problem, it will select any problem which an individual may suggest, whether the project is appropriate or timely. In this way we have a number of problems of the same type under construction by the individual members of a given class.

This condition is not proper, for any given problem should arise thru a genuine desire or need for such. If the instructor will talk to his class and suggest to the members that they should have a place for their article, he will start a right line of thinking. This talk may be supplemented with catalogs of furniture of straight line construction, curved work, period styles, etc. From these he may select the general style of his problem, which he will need to modify materially to suit conditions.

Creative ability is rare, and whenever a boy presents a rough disjointed sketch of something he wants, he should not be dismissed with a statement that it will not do. Rather this boy needs encouragement for he is displaying initiative, and has been thinking the thing out—a vital point.

A general study of furniture designs is essential, following the selection of a problem. For our type study we will select a Library Table. Each pupil needs to appreciate in a definite way a piece of furniture in good mass, line, and finish. The very best way to teach the fundamental principles of such design is by means of actual pieces of furniture. These should be selected with the idea of having some distinctly good, and some as distinctly bad. Thru a study of these, in which the good and bad lines and areas are noted, the boy is led to understand certain definite principles of design.

The service or function of any article is the first consideration. In a chair, for instance, comfort should not be sacrificed for beauty, or, in a desk, service, for ornament. However, in each the lines may be so arranged that beauty results, and service and comfort are assured.

Wood is subject to the same fundamental principles that underly all space arts. The wood worker is limited, as in other lines, by his medium. He can go no further than have his problem complete within its limitations, as

regards design. The two aspects of design, of formal beauty, and of utility need due consideration, with the latter the prime consideration. Sham or pretense should not be permitted. The construction must be honest, and the article made to be and appear stable.

The next consideration is size or proportion. Table dimensions are variable to any degree excepting height, which does not vary greatly. These over all dimensions determine the outline of the mass. The mass is then divided into horizontal and vertical divisions, determined by the size of rails, splats and posts. The area for cane weaving needs determining at this point. The kind of wood and its color and finish are considered in relation to the place the problem will occupy.

Special Mediums

Provision for materials other than wood should be made in considering line dimensions. If the table contains a drawer, the pulls need to be planned.

Caning is not a fad. It has been used more or less in every period since its introduction in the Jacobean period. It occupies a conspicuous place in modern furniture. Properly used, it adds a distinct touch to a well planned article. It should blend well with the wood used and make pleasing an otherwise unattractive area. No article should include any medium in its construction, unless that medium adds beauty, or performs a function.

Such mediums as cane, rush, reed, metal, leather, and the like, add life and variety to wood shop courses, and arouse interest. On these grounds alone their introduction is justified. Caning may be done outside for profit, once learned, and the boy in this work is brought to a realization that his shop experience has some definite relation to the commercial world. This realization is a vital thing in present day industrial education, whether in the grades or in the vocational schools.

Form of Construction

The kind of construction is a primary consideration. It will change lines and areas, and limits or modifies the entire project. Therefore the kinds of joints to be used are determined early. The table employs mortise and tenon joints, pinned. The stretcher is housed in the rails. The dowel joint is most used in furniture construction, and is satisfactory in soft woods, but in oak it is far less preferable than the mortise and tenon.

The Drawing

A very much discussed point is, "How complete must a drawing be before actual construction is permitted?" It would appear that work may begin as soon as the problem has been thought out, and a rough mechanical sketch completed.

A perspective or isometric sketch should be made initially. If a boy can make such a sketch the instructor may be reasonably certain that he comprehends his problem. Then follows the rough or free hand mechanical drawing in which relations of views are discussed and learned. Orthographic projection is simple of comprehension, if introduced with proper care. It is a language

and needs to be learned as such. Terms which confuse must be avoided. From this freehand mechanical sketch the complete working drawing to scale is gradually evolved. Blue printing should be done, at least an understanding of the process is desirable.

Everything considered, it is advisable to have a room set aside specifically for drawing. The reasons appear obvious. The drawing should run parallel with the shop course rather than precede it. Better shop work results, for there is no restlessness waiting for the shop activities.

The Construction

Each boy should make an acceptable type joint before he begins construction. When several joints are involved, as many exercises precede. Printed directions for making these, distributed to the class, aid materially, for they supplement the demonstration without the loss of time occasioned by waiting for the instructor. And the interpretation of the printed page is vital, and makes reading significant.

In general, a demonstration is advisable whenever a new construction problem arises. These should be brief and to the point. Over lecturing should be studiously avoided.

The Caning

The special medium of cane in a project requires a demonstration for each step involved. This may be done on the article itself. A practice area for caning is not advisable, for on the problem a mistake is not serious. It may be done over without difficulty.

Printed directions here, with photographs and sketches, assist the cane weaver materially.

Finishing

The finish on a given article adds the final touch to a well proportioned and executed problem. White oak is best fumed. The table, originally planned for fuming, is placed in the box after it has been well sanded, and allowed to remain until the desired shade results. It is then shellaced and sanded, then finished in "Stanvar" or Craftsman Lustre," or any finish which gives the work a soft texture.

Conclusion

With the completion of such a problem comes a sense of pride in ownership. The owner, as a result of his experience, is better able to appreciate and judge good furniture, and allied work.

The practice in our school shops of sanctioning only small articles is to be deplored, for they do not arouse or hold interest, or permit joy in the work, as do larger articles. Inasmuch as the same type of construction may be used in either, there follows no logical reason why the average boy cannot handle the larger, more interesting problem. The resultant interest and pride in his work justifies the larger project.

Illustrations, and printed outlines concerning Mr. Perry's address were distributed to the teachers. The great interest in the typical problem was manifested by frequent interruptions, and discussion.

Mr. C. E. Howell: "Mr. Perry advocates thorough work; and in connection with the Syllabus he gives us a vital point to take hold of if a new syllabus is to be made.

"Not enough room is left for individual expression in our syllabus. No teacher will follow rules that say 'do this and that'. It kills work and individual expression.

"Mr. Perry did not specify any definite processes or definite order, but a general outline of the underlying principles of the work." "It is on this plan that a new Syllabus must be made". "It must be a reference, not a text".

Miss Anna G. Brown: "The purpose of these High School Conference Meetings is not to criticize, but to build up uniformly the work throughout the state." "Constructive building should be the ideal."

Few have seen the Syllabus prepared by this Section, or having seen it have approved it, or having approved of it have worked accordingly.

"The question is 'Should we revise this Syllabus in the Manual Arts, or are we satisfied?' Many disagree with the course in Architectural Drawing for High Schools, as presented last year. It is not satisfactory to them. Why not get together and produce a standard Syllabus."

H. C. Taylor, Charleston: "Many high schools, including Charleston, employ only one teacher of manual training." "It is impossible to satisfy the rules of the Syllabus." "The course is more essential as a community need, than to meet the prerequisites of the University." "There is only one-half year for mechanical arts, and one-half year for wood work, that credit is given in." "The larger high schools have courses separated." "The Syllabus should be arranged to help out the smaller schools of the state, as well as the larger ones." "It is time to get together as a section and revise the Syllabus."

Mr. A. F. Payne, Peoria: "There are seven distinct types of manual training in the State of Illinois today." "The only agreement between these is in the use of the same tools, and somewhat the same materials." "We must demand the good points of all, and dis-

cover wherein the bad points lie, combining the good points for our Syllabus."

Professor Arthur Payne, Assistant Supervisor Manual Arts, Bradley Polytechnic, Peoria, presented a paper on "Design as Applied to Wood Work". Blue prints; concrete examples of manual training design on wood work of various kinds; tools, and blackboard illustrations were used to illustrate the text, which was as follows:

Five years ago I was enthusiastically advocating the correlation of the work of our design classes with that of the elementary wood working classes in our manual training shops. Today I know that to be an impossible scheme to carry out, because of many factors, but chiefly because the art and design teacher, usually a lady, does not know the restrictions and requirements of materials, tools, and processes, or the methods of construction, and because the shop teacher, usually a man, does not know the rules and principles governing the application of ornament. The design teacher and the shop teacher generally have difficulty in getting together on any proposition, and usually find it a hopeless task to correlate the work of the two classes. I have only known one instance where there was real correlation between the two teachers and they spoiled it by getting married.

We cannot accept this condition of affairs for we positively must have more and better art and design in our schools and especially in our manual training shops and vocational classes. We must have it because art is vital to the life of the nation and to every individual; we must have it because of its economic value; art is the most potent and vital factor in our industrial development, manufactures and salesmen know that a thing has got to "look good' to sell; we send raw material to Europe, and then buy it back at an advance of 500% for the art they have put into it; we must have it because of its psychological value, in that it adds greater interest to the work by making an appeal to the instinct to decorate; it enriches the content of manual training and is of great value in the majority of vocations, by having more art and design in our shops, we will tend to remove one of the most serious objections to shop work that is being made, which is, that shop work is non-cultural, for in art and design we have a subject that is most eminently cultural and at the same time intensely practical; it also makes a strong appeal to the commercial sense in that it adds more value to a piece of work than any other factor.

Of course we all agree on the necessity of more design in our shops, and the problem for us at this time is to decide upon the best method of teaching and applying design in our elementary shops. The broad ultimate aim of any type of education is appreciation and power. The proximate aim of our special branch of education is the development of appreciation of the beautiful and useful, and of power to produce beautiful and useful things.

With this aim clearly set before us, we may now consider the methods whereby we may reach it. We must consider the mechanics and tools of our profession, otherwise known as the method of teaching. We as teachers must

first analyze, define and classify, and reduce the problem to its simplest terms, and then illustrate and explain by means of simple direct statements and rules that are easily tested by the student, and then we can get a reaction from them in terms of better work and reasons for the steps they have taken. We must use this definite aim and method manner of teaching to get results from a large body of students, in the short time allowed us.

The piece to be ornamented must be designed structurally first. The class may do this considering use, tools, materials and process, or blue prints may be furnished them with the requirement that they shall refine and ornament it.

The ornamentation of woodwork should be divided into two types; first, that which is designed and applied; second, that which is structural arising from the materials, tools, and process used. This morning we will consider these two groups in order. When applying any decoration to wood the first thing to be considered is the method of applying it. We must understand the tool and its limitations. The simplest tool for this purpose in elementary work is the carving tool known as a "veining tool" such as I have here. It is easily handled by beginners, is an effective means of decoration and is a good beginning for further work in carving. The "U" shaped groove that it makes gives a pleasing effect with a minimum of effort, it cuts readily with, against, or across the grain in curves or straight lines.

After we have gained control of the tool we must design our ornament. One of the most valuable rules in designing ornament is "That the ornament must support the space". The instructor must show the class designs that violate this rule and others that obey the rule, and ask them to choose the most pleasing design; they will invariably choose the best design. It must be thoroughly understood that the examples must be shown first, and the rule stated afterwards.

The next rule in importance is "That all elements of the design must harmonize". This means that if we start our design by using straight lines, that we must not suddenly introduce a soft floppy curve. The design must be consistent and "seem to belong together" as one of my young friends puts it. Lead the class to see that simple straight lines are better than flowing curves running wild all over the object.

The third rule is "That the ornament must have a center or centers of interest". In some very simple border designs this rule is not used, but if the design becomes at all pretentious it is necessary. It means that there must be a center of attraction for the eye to rest upon.

The fourth rule is "That the points of force must be recognized and made use of". In all designs there are certain places where the design logically springs from, and where the centers of interest should be. In these veined designs for coat racks the points of force are in the corners, this being so the centers of interest should be in the corners. In these designs for glove box covers, the points of force are in the corners and one is also in the exact center of the cover, therefore the centers of interest should be in the exact center and in the corners. These four rules are fundamental in designing any ornament for any problem in any material.

There is another, seldom used, tool that has great possibilities in the way of decoration, and that is the "router". This is a comparatively inexpensive tool with which "recess carving" is quickly made; it is also very useful in cutting out the groove for strip inlay. As you see in this one the cutters are adjustable and can be obtained in different widths. Care must be taken to make deep knife lines where the "router" is used.

We must now consider the second type of decoration, the structural. As a general thing we are not aware of the possibilities for the decoration and refinement of elementary wood work by the use of chamfers and moldings of various kinds. The average manual training teacher, if he wants to chamfer a board one-half inch thick, usually marks two lines each one-quarter inch from the corner and planes to the lines. This is the most monotonous proportion there is; better make it three-eights on the top and three-sixteenths on the sides, and other similar proportions. The universal plane is another good tool to use in getting molding and chamfers. A rebate in connection with a plain chamfer is a very effective decoration. The stop chamfer is another method of decoration that we do not use often enough.

Design taught by this method and applied directly to the object is vital to the work and to the student; the student must constantly judge and compare and refer back to the rule and to an ideal. We must realize that good taste in design can only develop through the making of many choices with reference to some ideal. Design adds to the commercial value of the product very much more than would an artificial standard of technique. Next to durability and utility the "good looks" of an object is of prime importance. The educational value of design taught in the shops, as need arises, by this method cannot be questioned.

The interesting and instructive nature of the paper was shown by the frequent interruptions to ask questions, and the discussion that followed.

Q. What class of students are allowed to use the router?

A. That depends upon the amount of skill they have acquired. Do not use this in the first eight or ten weeks of the course. However, it should be utilized even in the Eighth Grade.

Q. Do you object to the pen tray as a manual training object?

A. No, what I desire is variety, not of articles, but of design on the articles. Do not give the boy a blue-print, but let him do the work of designing for himself, if possible, right in the shop.

Q. Is it desirable to give blue prints at any time?

A. Yes. Students run wild if allowed all leeway. Control their operations, but allow individuality.

Mr. A. P. Laughlin, Peoria: "Design was presented in a logical way. Our tool practice should be presented in the same orderly and

logical fashion. Therefore, a Syllabus should be provided, stating the fundamental principles to be taught first. The order might not be absolutely essential, but the principles and their application should be given consideration. The tool practice and systematic art instruction should be combined. This will allow personality and motivation of work. However, blue prints may be provided, giving dimensions, etc., but only for the purpose of study and comparison, not for copying. Different models may be used, but the fundamental principles should be the same. It is only by the use of the Syllabus that uniformity will be obtained. Also interest will be given in this manner.

Mr. Perry was appointed Chairman of the Nominating Committee, with the power to appoint two members of the Committee.

The afternoon session of the Manual Arts Section of the Conference was held in the same room beginning at 2 P. M. Fifty-four were in attendance. Following the usual announcements by the Chairman, Miss Anna G. Brown, the program of the afternoon was carried out.

Professor W. F. Book, State Director Vocational Education, Indianapolis, Indiana, presented an address an "Vocational Education and the High School." Frequent interruptions occurred to ask questions, and an informal discussion took place after the address.

Vocational Education and the High School

I have been asked by your program committee to describe what we are doing in Indiana to solve the problem of Vocational Training for the young people of our State, more particularly to tell what we are doing to provide Vocational Education for those who are attending our High Schools, and to describe this work in such a way that it would be of practical value to the teachers attending this Conference in their attempts to deal with the problem of providing Vocational Training in their respective communities and schools. This I shall attempt to do in the best way I can, but in order to give you any clear idea of what Indiana is doing in the field of Vocational Education, it will be necessary for me to define what we mean in Indiana by "Vocational Education" and to explain how we came to take up the problem of providing Vocational Training for the people of our State. Without this statement and some description of our purposes and plans, details in regard to courses of study, teachers and the work already done, would be meaningless and out of place.

I shall, therefore, first attempt to define what we mean in Indiana by Vocational Training. It will not be necessary for you to agree with my definition of Vocational Education or with our State Program for Vocational work. I am not interested in whether or not you agree with what I may say.

All I ask is that for the present you dismiss any ideas you may have on the subject and attempt to get from my address a clear and definite understanding of the points I shall try to make. You can then test their accuracy and worth for yourselves.

1. Vocational Education Defined

By Vocational Education we mean in Indiana just what the term implies, an education or training which seeks to fit an individual directly for a particular occupation or trade. The purpose of a Vocational Department or School is to fit the students taking such courses for efficient service or work in the particular occupations taught in the school. The course of study in such a Department or School is made up of such practice or shop work and such academic and science subjects as may be necessary or as will be found helpful for students desiring to prepare themselves for a particular line of work. All subjects and work which contribute to this purpose are selected, all other subjects or lines of work are excluded from the course. For example in a Vocational Department or School for Printing, those subjects are selected which give the students the technical knowledge and shop practice which a prospective printer must have. Such English, Mathematics and Science work is given as may be necessary or helpful to a group of students who are learning the printing trade. All shop, science and academic work is selected for the contribution it makes towards preparing the students for this particular line of work. In a Vocational Department or School for homemaking those subjects—vocational, scientific and academic—are selected which will give to the students taking the course the help they need to prepare them for the business of homemaking. When a student selects such a vocational course or enters a Vocational School it means that he has thereby indicated his desire to fit himself by education and training for a particular occupation or line of work; the same as when a prospective teacher goes to a Normal School or when a young man goes to a Law School to study law. This is true because all subjects in the course have been selected with this purpose in mind, and because all the work of the school is conducted with the view of fitting the students taking the course for a particular occupation or life career.

It may readily be seen from this definition that general education or the instruction now given in our Public Schools is not Vocational either in its aims or results. Our regular schools merely attempt to prepare a high grade of raw material. A Vocational School or course aims to turn out a finished product—a printer, a carpenter, a physician, a teacher or lawyer—students trained by education and practice for a particular occupation or line of work. It also apears that the study of Home Economics, Manual Training and Agriculture as these subjects are generally taught in our schools, is not Vocational work, because the primary purpose of the instruction in these subjects is not to fit for a definite occupation or trade and because the other subjects which the student takes for the rest of his course are not selected with the view of contributing directly to his vocational efficiency in a particular line of work.

2. The Problem of Vocational Education

In Indiana we have taken upon ourselves the task of providing vocational instruction for all our young people who desire to fit themselves for efficient and productive work in the shop, in the home or on the farm. We have undertaken the task of extending the organization and work of our Public School system in such a way that efficient Vocational Education may eventually be provided for all of our people. We have come to see that the wealth of a community or State depends not merely on the richness of its soil or natural wealth, but upon the character of its citizenship, upon the men and women who turn these things to account. We have come to feel that our present and future citizens must be better trained; that they should be educated not merely to appreciate and understand the work and achievements of other men and times, but that they should be made, by education and training, skilled producers in some useful field of human endeavor. We believe that every citizen of the state should be prepared by education and training to do some useful form of work; and feel that until this has been achieved the individual will not be able to make his own life of value to himself or himself of service to society. In a word we have decided that we must, by education and training, fit all of our people for productive and serviceable citizenship on the highest plane possible for them. How did we become interested in this problem of Vocational Education?

3. Development of the Vocational Educational Idea in Indiana

A careful study of the Educational development of our State reveals two marked tendencies which are responsible for the step in providing Vocational Education which we are taking:

(1). A definite and persistent tendency towards democracy in education. This has made us gradually extend and enlarge our system of Public Schools until they have opened the door of educational opportunity to all classes of people in the state. The first constitution of Indiana made it the duty of the General Assembly to pass such laws "as shall be calculated to encourage intellectual, scientific and agricultural improvement, by allowing rewards and immunities for the promotion and improvement of all arts, sciences, commerce and manufacturing." The General Assembly was further authorized and instructed "to countenance and encourage the principles of humanity, industry and morality and to provide by law for a general system of public schools ascending in regular gradation from township schools to a State University wherein tuition shall be gratis and equally free to all."

This tendency towards democracy in education is important. There was a time in the history of Indiana when all that was learned had to be acquired from our parents and associates or gotten from nature and personal experience as the robin learns where and how to get its breakfast. No conscious effort was made to improve by education or training the condition of our citizens. This was followed by a period when purposive attempts to educate our future citizens were made, but when most of these efforts were directed

towards helping a special class, towards educating a few selected individuals who had the leisure and inclination to devote themselves to purely intellectual pursuits, a time when all our educational efforts were given to the education and training of a few leaders. For the past hundred years we have been striving to make our public schools democratic in scope. We have been developing a system of free public schools, which would open the door of Educational opportunity to all our future citizens, believing that in our free public schools and in the education and training of all our citizens lies the only safeguard of our Liberty, the only sure road to our permanent advancement as a commonwealth. We have succeeded in developing a system of free public schools which begins with the district, township or neighborhood school and extends in an unbroken line through the high school to our State University, with its scientific departments for research and its professional schools for the training of leaders in the more important fields of work. Every part of this system has been made free and is kept open for every boy or girl in the State capable of profiting by the instruction given. Fifty years ago we had no public high schools in the sense that we speak of them today. Now every community and city has a public high school for those who wish to attend. Fifty years ago our State University was undeveloped and our common schools reached only a small per cent of the school population. Today we have a modern and efficient University, and we require all children to attend our public schools until they are 14 years of age. In a word we have succeeded in making our public school system truly Democratic in scope.

(2). A second movement in our educational development that has been just as constant and important as this tendency towards universality, is our attempt to make the work of our public schools more and more helpful to those whom we try to instruct. It is important to make education universal as we have done, to extend and enlarge our public school system in such a way that it opens the door of educational opportunity to all groups of present and future citizens in the state. It is even desirable to require all young people to attend these schools for a certain period of time to insure that they will be prepared for intelligent citizenship, as has been done by our compulsory school laws, but what is more important still is to make the work of these schools truly efficient and serviceable to those whom we are trying to help.

It is these two tendencies in our educational development, more particularly the latter, that has forced us to take up the problem of Vocational Training. When we had succeeded in making our public schools democratic in scope, when we came to have all sorts of young people in our Schools, those who would enter the professions or become leaders in all lines of work as well as the sub-normal, feeble-minded and those who expected to enter all sorts of commercial and industrial pursuits, the problem of making our public school work truly helpful to all these various groups had to be squarely met and solved. The problem of how to conserve and cultivate the talents of all these young people began to press for solution.

It was seen that a system of education or training designed for a special group would not meet the needs of the heterogenious mass now attending our schools. It was seen that to meet the conditions and needs of the young people in our schools we must consider their varying capacities and talents as well as the work which they would or should take up as their life career. It was found, much to our surprise and dismay, that we were actually educating our young people away from the home, away from the farm, away from work and giving them false ideals of life instead of fitting them for productive citizenship. In a word we were face to face with the problem of vocational training, with the problem of how to change and extend the work of our public schools so that they would more nearly meet the true needs of our people.

4. How Indiana Is Attempting to Solve This Problem of Vocational Training

Rightly to understand Indiana's program for Vocational Education, it is necessary to see that our present attempt to meet this situation is not out of harmony with our past educational ideals and practices, as I have tried to show; but that our present program for Vocational Education marks the culmination of a long series of attempts to make our system of public schools truly democratic and helpful to all of our people. Much of the ground has already been covered. We have succeeded in making our Public Schools democratic in scope. We have also been taking care of the vocational needs of certain groups. For a number of years we have been providing vocational instruction, more or less efficient, for the young men and women in our State who desire to fit themselves for the professions of medicine, engineering, teaching, some special forms of business, and law, as you are doing in Illinois. We have our State Law and Medical School, our engineering and Normal Schools which are planned and maintained for the sole purpose of preparing young people for these particular lines of work. The new step which we are taking in Indiana is to provide just as definite and efficient vocational instruction for that large group of young people who choose or must work in the shop, in the home or on the farm as we are already providing for those who may desire to enter the so-called higher professions. We are trying to extend and enlarge the work of our public schools in such a way that the vocational needs of the more than 80 per cent of our young people who go into these fundamental lines of work may also be met. It is the chief aim of our Vocational Education law to make provisions for adding to our present system of public schools, special vocational departments and schools which will give as definite and efficient a vocational training to the young man and woman in the state who desire to fit themselves for profitable work in the home, in the shop or on the farm as we have already provided for those who desire to fit themselves for the professions of medicine, teaching, engineering and law.

5. The Organization of Vocational Departments and Schools.

Three types of vocational departments or schools are being organized: (1) All-day schools where the entire time is devoted to instruction, so chosen and carried out that it will fit specifically and on a high plane for a particular

occupation or trade. Such full time or Vocational courses have been organized in (a) Homemaking, (b) General Agriculture, (c) Commercial Gardening, (d) Printing, (e) Machine Shop Practice, (f) Electrical Work, and (g) Carpentry, in a few representative cities and country districts.

(2) A second type of vocational school which is being extensively established is the evening vocational school, designed to help adult workers who desire to make themselves more efficient and productive in their chosen occupation or trade. In these schools trade extension work is given to certain groups of trade workers and instruction in homemaking subjects is provided for all women over 17 years of age, no matter how they may be employed during the day. These schools are organized under special directors and are conducted in our regular school buildings, in factories and shops suitable for the particular lines of work undertaken. All the work is organized around a particular occupation or trade and is conducted with the view of increasing the vocational efficiency of the special groups of workers attending the school. No trade preparatory work is given in our evening vocational schools.

(3) A third type of school that is being organized is a part-time school for apprentices and all young workers between 14 and 25 years of age engaged in skilled trades. These part-time classes are for the young people now out of school who may be brought back to school for part-time instruction specially planned to improve their efficiency or skill in the line of work in which they are engaged. Such schools for housemaids, printers, carpenters, machinists and saleswomen have been organized. No general continuation work for young people engaged in juvenile or temporary occupations has as yet been organized in Indiana because this type of continuation work was not state-aided by our law.

As to the results already achieved it may be sufficient to say that 7518 different students attended these vocational schools last year, the year our law went into effect. Twenty-five different cities or communities organized one or more types of vocational schools last year. The enrollment in these cities will be materially increased this year and a number of new centers are being organized this year, and the methods of instruction improved. I should, perhaps, add that these special vocational departments and schools while distinct in organization and aim are, nevertheless, a regular part of our state system of public schools. They are supervised by a special director or principal to insure efficiency and definiteness of method and aim, but they are managed and controlled by the Superintendent and regular School Board, the same as the rest of the system. About the teachers, course of study and equipment in these vocational departments and schools, I shall have something to say in the discussion if you are interested in these points.

6. Pre-Vocational Work in the Regular Schools

A second important line of work which we are doing in Indiana and one that we believe is absolutely necessary to give a right basis for all vocational work is the instruction in Practical Arts subjects—elementary agriculture, domestic science and industrial arts or manual training—which our

law requires all schools to give as a part of their regular course of study. This work naturally falls into two parts. (1) The hand or industrial arts work to be done in the elementary grades, normally in the first six years of school. This we are making largely or wholly educational. It serves the double purpose of acquainting the children with their environment by a study and handling of concrete things, and helps to cultivate the habits of muscular and mental control so essential for all future lines of service or work. (2) The second period consists of the Practical Arts or Manual Training work done in the Pre-Vocational period, normally in the 7, 8 and 9 grades. This work consists of the instruction in Agriculture, Household and Industrial Arts given to pupils while they are in that period of development where they begin to get interested in Industrial affairs; in the period when their education should be broadened and when they should be given help in the matter of getting a correct understanding of modern industrial and social life so that they might be able to make a more intelligent selection of a life career for which specifically to prepare in the next and last stage of their school career.

All schools in our state are required to give work in Domestic Science to the girls in the 7th and 8th grade and work in either Industrial Arts or Agriculture to the boys of these grades. The State Board of Education has full control and direction of all this Practical Arts work. All High Schools are required to provide at least a full year's work in Domestic Science for the girls and a year's work in either Agriculture or Industrial Arts for the boys.

The purpose of the Practical Arts work in this Pre-Vocational or Junior High School period is two-fold. We hope (1) to give our young people a better understanding of all the fundamental occupations and industries; an understanding and appreciation which will enable them to make a wiser selection of a life career for which they should later prepare in a vocational school. (2) We attempt, in the second place, by means of actual practice or shop work to give them an opportunity to try themselves out in other lines of work besides the academic.

It is impossible to describe in the brief time at my disposal the nature and character of this work. It is the Manual Training, Household Arts and Agricultural work revised, dignified and made a regular part of our educational system and work. It constitutes the necessary preliminary step to real vocational work. Information is given about the more important industries with the emphasis on the industries represented in the community. In agriculture real participation in the way of actual supervised project work is required. The same is true in Domestic Science. Thirty thousand boys and girls in the state were pursuing actual projects in agriculture and homemaking last summer, under the supervision of trained leaders, i. e., they were carrying on actual project work along the lines in which they had been instructed in the Schools last year. In the Industrial Arts we are trying to make the shop work as real as possible and in the larger schools we are giving the boys a chance to try themselves out in more than one line of work. We hope, in time, to make this Practical Arts instruction truly pre-

vocational in character. One hundred and twenty thousand pupils, more than a fifth of all the pupils attending our public schools, were enrolled in these practical arts courses last year.

The fact that the school attendance for the State, based on total school enumeration and actual school enrollment and attendance, has increased 4.27% during the two years since this Pre-Vocational work was revised and introduced into all our schools and the further fact that the average daily attendance on enrollment has increased 8.98% indicates the value and popularity of this Pre-Vocational work. I do not know of any other factor which might account for such an increase in enrollment and average daily attendance during this period.

7. Work of County and City Agents of Agriculture and Home-making

Of the work of County and City Agents of Agriculture and Township or County Supervisors for Domestic Science, I will not speak except to say that provisions have been made in our law for the appointment of county agents of agriculture in every county in the State—Agents who spend all their time giving trade extension work to the farmers and helping them work out the agricultural problems of the county. Thirty-four counties have such trained agents at work and a number of cities have put in an agricultural agent to help with the home gardening work. These city agents not only give assistance to the citizens in the matter of taking care of trees, flowers, beautifying the home premises and teaching them to cultivate the vacant lots, but they work with the park boards, city council and Parent-Teachers Associations in the matter of beautifying the city.

The Township and County Supervisors for Domestic Science help teachers and County Superintendents with the Domestic Science work and are trying to work out the home-making problem for their district in a similar way to that employed by the County Agents for Agriculture. A better understanding of the nature and value of this work may be obtained from our bulletins and reports.

8. Vocational Education and the High School

But what about the problem of Vocational Education in the High School? What can be done by way of providing Vocational Training for the group of young people now in our High Schools?

1. One important problem that must be solved is to take better care of the Manual Training or Practical Arts work done during the Pre-Vocational or Junior High School period. This work needs to be given a new lease of life and to receive the time and attention it deserves. The entire High School course for this period must be revised. The Junior High School idea will, if we are wise, help us to solve this problem.

2. If properly equipped or interested the High School might, in the second place, organize part-time or Continuation classes for the young people now out of school. (a) Provide trade extension work for young apprentices and the young people engaged in skilled trades, (b) organize general con-

tinuation work for the young people engaged in "dead end" jobs, those who need vocational guidance and pre-vocational work.

3. The High School might, in the third place, organize evening vocational classes. (a) For homemakers, (b) Trade Extension courses for all trade workers, men and women, who desire to make themselves more productive and serviceable to their employers and themselves. Trade preparatory courses should not be attempted in evening schools because they are apt to prove a waste of time and money for all concerned.

4. The High School might also organize short Vocational day courses for those who cannot go on with any other kind of work, after they have had the fundamentals in the Elementary Schools.

5. Above all the High School should take definite steps to solve the problem of providing Vocational training for the young people now attending the High School.

I shall not attempt to speak of the Pre-Vocational work that should be done in the High School, or its relation to the problem of the Junior High School. This would require a complete lecture in itself. Neither shall I attempt to say anything about the Part-time or Evening Vocational classes that might be organized in a City or Township High School. This would require a detailed statement of just how this problem should be attacked in a given community and how such work should be organized and conducted, a most interesting and important topic of which I have no time to speak. I merely want to point out that, in my judgment, this problem cannot be successfully taken up or solved without careful study and preparation on the part of the teacher who is to direct the work and without the full cooperation of all the school authorities and citizens directly concerned. When this problem is so taken up nothing that I know of will do so much towards arousing a genuine and universal interest in the work of your school as this attempt to help in a vocational way the groups of people to be reached by the Evening and Part-time Vocational School.

I want in the brief time that remains to speak particularly about the problem of how to take care, in a vocational way, of the group of young people now in our high schools.

The following facts are significant and bear directly on this problem:

1. We have a select group of young people in the High School, a rather high grade of raw material to work with. Most pupils do not reach the high school as these schools are now conducted.

2. Most or fully half of the pupils who enter the High School drop out before they finish the course of study which we have set for them to take.

3. Our high schools contain all those who will go to college and later enter the professions, also those who will go into the various agricultural, industrial and homemaking pursuits on a rather high plane.

4. Most pupils in our high schools will stop school when they leave the high school, whether they have completed the course or not.

Now what can be done to meet the educational and vocational needs of these young people. We must, in the first place, organize our work somewhat differently for the pre-vocational or Junior High School period as I have already pointed out. We must work out the problem of the Junior High School. We must, in the second place, follow the instruction in this pre-vocational period with courses which have a definite vocational or professional preparatory aim, a purpose which determines not only the selection of the subjects which the pupils are to take but determines the method and character of the work to be given to a particular group.

This problem is being attacked in Indiana by a special High School Commission appointed six months ago by the State Board of Education for the purpose of working out some of these problems and recommending a way whereby the problem of providing efficient vocational training for the young people now in our high schools might be effectively solved.

Our first High Schools gave a sort of "Table d'Hote" bill of fair to all their students. The one-group course was prepared with the view of fitting young people for college and further academic study. The next step taken was to add a variety of subjects to this single High School course. During this period everybody strove to get their pet subject introduced into the High School course. For a time we added all these subjects to our "Table d'Hote" bill of fare, making all students take, or attempting to make them take all that was offered. Finally we had to resort to the elective plan. From the heterogeneous mass of subjects, or variety of loosely constructed courses, pupils were required to choose the subjects which were to make up their High School course. We tried to give our pupils some direction and guidance in their choice, but the bill of fare in our larger High Schools soon became as long, complex and difficult to select from, as it is difficult to order a meal from the eight-page bill of fare in a first-class city cafe.

We have finally gotten around to the stage where we realize that our High School curriculum should be made up of a few very definite and carefully planned courses, each built up around a definite purpose or aim—general education, college or professional preparatory or Vocational—which purpose or aim should serve as a selective agency in determining which subjects shall constitute a particular course. The courses to be offered in a particular School would naturally be determined by the needs of the young people in the community which the school is attempting to serve. This means that instead of teaching and developing subjects as most of us are now doing, we would be preparing particular groups of young people by means of well planned and selected courses of study for specific careers or future lines of study or work.

To provide efficient vocational instruction for its pupils the High School should therefore, have an "agricultural purpose" course—a course so planned and conducted that it would lead *to* and prepare as definitely *for* productive work on the farm as the college prepartory course now fits for further study in a college or university. It should also have "Industrial purpose" courses made up of subjects and work which lead directly *to* and prepare *for* cer-

tain specific industrial careers. It should also have a "homemaking purpose" course, which would include not only a study of the theory and practice of cooking, sewing, home millinery and dressmaking, but household economy, a study of social and home problems, the care and management of children, music, designing and art, and in certain schools such agricultural subjects as gardening, dairying and poultry. Everything in fact should be included in the course that is needed to prepare a particular group of young people on a high plane for the business of homemaking. Some high schools might have one, two or three of these courses, others might add to the above list a "teacher's preparatory" and other vocational courses. The traditional and important "college and professional preparatory courses" must not be forgotten or neglected, but all these courses should be so planned and administered that they would prepare the young people taking the course for a specific line of work and should be so named that parents and pupils could tell which course to select.

In some such way as this real helpful vocational instruction could be provided in the Senior High School and much waste of time, human energy and talent eliminated.

If this problem of providing real efficient vocational instruction in the High School is to be worked out the entire course and work of the High School must be revised. The pre-vocational problem must be worked out in the seventh, eighth and ninth years and a Junior High School developed for this purpose. It will also be necessary to provide short vocational courses for those who feel that they must begin real vocational work at fourteen or fifteen years of age. This might be done either in a specific vocational school or in the Junior or Senior High School. In the Senior High School or last three years of the high school all pupils should be pursuing a course which was so planned and conducted as to lead directly to further study along specific lines or to a given field of work.

It is not at all clear as yet whether a variety of such special courses or departments as I have described can be successfully conducted in the same high school, without the purpose and work of such courses becoming obscured, or whether the vocational work must be organized in a separate school. It may become necessary to have certain of these courses given in one type of school and other courses given in still another type of school—each school created and conducted for a particular purpose or type of work. One thing seems reasonably clear, namely: When our high schools, if they ever do, become so organized and equipped that they will be able and willing to take care of the vocational needs of the pupils which now attend, they will also be able to provide Vocational Courses for the short term pupils who must prepare for productive work on a somewhat lower plane and also for those adults who desire to increase their efficiency in their chosen field of work by means of every instruction. When this has been done our high schools will have fulfilled their true mission in a democracy.

The report of the Permanent Committee on Library of Manual Training Books was received and adopted. The report is as follows:

List of Books on Manual Training for a Small School Library

By A. C. Newell, Chairman of Committee

Benchwork in Wood

Correlated Courses in Woodwork and Mechanical Drawing, by Ira S. Griffith—Pub. by Manual Arts Press, Peoria.

Design and Construction, by William Noyes—Pub. by Manual Arts Press, Peoria.

Essentials of Woodworking, by Ira S. Griffith—Pub. by Manual Arts Press, Peoria.

Furniture Upholstering, by J. T. Stevenson—Pub. by Clifford & Lawton, N. Y.

Handwork in Wood, by William Noyes—Pub. by Manual Arts Press, Peoria

Manual Training Toys, by H. W. Moore—Pub. by Manual Arts Press, Peoria.

Problems in Furniture Making, by J. D. Crawshaw—Pub. by Manual Arts Press, Peoria.

Wood Turning and Pattern Making

Problems in Wood Turning, F. D. Crawshaw—Manual Arts Press, Peoria.

Wood Turning, G. A. Ross—Ginn & Co.

Wood Pattern Making, Horace Purfield—Manual Arts Press, Peoria.

List of Books on Manual Training for a Large School Library

By A. C. Newell, Chairman of Committee

Include also all books given in the list for a Small Library.

Beginning Woodwork, C. S. Van Deusen—Manual Arts Press.

Benchwork in Wood, W. F. M. Goss—Ginn & Co.

Constructive Carpentry, C. A. King—American Book Co.

Elementary Cabinet Work, F. H. Selden—Rand, McNally & Co.

Elementary Woodwork, F. H. Selden—Rand, McNally & Co.

Elementary Woodworking, E. W. Foster—Ginn & Co.

Educational Woodworking for School and Home, J. C. Park—Macmillan Co.

Handbook of Sloyd (old book), Otto Salomon—Silver, Burdett & Co.

Hodgson's Hardwood Finishing, Fred T. Hodgson—F. J. Drake & Co., Chicago.

Kitecraft and Tournaments, Miller—Manual Arts Press.

Mission Furniture and How to Make It, Parts 1-2-3—Popular Mechanics Co., Chicago.

Modern Cabinet Work, Wells and Hooper—John Saul Co., N. Y.
Problems in Carpentry, Louis Roehl—Webb Pub. Co., St. Paul, Minn.
Problems in Woodworking, M. W. Murray—Manual Arts Press.
Timber, Bulletin 10. Bureau of Forestry, U. S. Dept. of Agriculture—Sold by Supt. of Documents, Washington, D. C.
The Modern Wood Finisher, F. Maire—Press of Western Painter, Chicago.
The Steel Square, Fred T. Hodgson—Industrial Publishing Co., N. Y.
Wood and Forest, William Noyes—Manual Arts Press.
Woodwork, Samuel Ritchey—American Book Co.

List of Books on Mechanical Drawing for a Large School Library

By A. C. Newell

Agricultural Drafting, Howe—Manual Arts Press.
Architectural Drawing, Greenburg and Howe—Manual Arts Press.
Elementary Course in Mechanical Drawing, Arthur W. Chase—Pub. by Howland Speakman, Chicago.
Elementary Mechanical Drawing, C. W. Weick—Pub. by McGraw-Hill Book Co., N. Y.
Machine and Architectural Drawing, Book 2, Spink, Sloan, Evans, Durand and Zimmerman—Pub. by Atkinson, Mentzer & Grover, Chicago.
Machine Drawing, John S. and David Reid—Wiley & Sons.
Mechanical Drawing, Book 1, Spink, Sloan, Evans, Durand and Zimmerman—Pub. by Atkinson, Mentzer and Grover, Chicago.
Mechanical Drawing, Phillips and Orth—Scott, Foresman & Co., Chicago.
Mechanical Drawing, Philip W. Hutton—Scott, Foresman & Co., Chicago.
Mechanical Drawing, A. K. Cross—Ginn & Co.
Mechanical Drawing for Trade Schools, C. C. Leeds—D. Van Nostrand Co., N. Y.
Notes for Mechanical Drawing, F. E. Mathewson—Taylor, Holden Co., Springfield, Mass.
Problems in Mechanical Drawing, C. A. Bennett—Manual Arts Press.
The Essentials of Lettering, French and Meikeljohn—McGraw-Hill Book Co.

List of Books on Manual Training in Education for a School Library

By A. C. Newell

Educational Meaning of the Manual Arts and Industries, R. K. Row—Pub. by Row, Peterson & Co., Chicago.
Education for Efficiency, E. Davenport—D. C. Heath & Co.
Examples of Industrial Education, F. M. Leavitt—Ginn & Co., Chicago.
Hand and Eye Training, Dr. W. Goetze—O. Newman & Co., London.
Handwork Instruction for Boys, Dr. Alwin Pabst (Tr. from the German)—Manual Arts Press, Peoria.

Industrial Education, H. S. Person—Houghton, Mifflin Co.
Manual Arts for Vocational Ends, F. D. Crawshaw—Manual Arts Press.
Mind and Hand (old book), C. H. Ham—American Book Co., Chicago.
Theory of Education Sloyd (old book)—Silver, Burdett & Co., Chicago and N. Y.
The Worker and the State, A. D. Dean—The Century Co., N. Y.

SHORT LIST OF USEFUL BOOKS ON MECHANICAL DRAWING FOR A SCHOOL LIBRARY

By M. L. Lyon

Elementary Mechanical Drawing

Problems in Mechanical Drawing, Charles A. Bennett—M. A. P.
Mechanical Drawing, Gardner C. Anthony—D. C. Heath & Co.

Elementary Machine Drawing

Machine Drawing, F. E. Mathewson—Taylor Holden Co.
International Correspondence School's Reference Library No. 39—I. C. S. Pub. Co.
Machinery's Reference Series, Nos. 85-86-87-88—Machinery Pub. Co.

Orthographic Projection

Introductory Course in Mechanical Drawing, J. C. Tracy—A. B. C.

Architectural Drawing

Architectural Drawing, Edminster.
Architectural Perspective for Beginners, William T. Comstock—F. A. Wright.

LIST OF BOOKS ON METAL WORKING FOR A SCHOOL LIBRARY

By A. P. Laughlan

Machine Shop Practice—By W. J. Kaup.
The Storiett Book for Machinist Apprentices, by Howard P. Fairfield and Carl S. Dow.
Forge Practice, by John L. Bacon.
Notes for Forge Shop Practice, by J. D. Littlefield.

The Nominating Committee presented Mr. A. P. Laughlin of Peoria, as Chairman for 1916.

Following the usual announcemtns, and an urgent invitation to attend next year, the session adjourned.

Respectfully submitted,

EDWARD J. LAKE.

Mathematics Section

High School Conference, University of Illinois, November 19, 1915.

Miss Bessie F. Kline, Urbana, presided.

The nominating committee composed of Dr. E. H. Taylor, Eastern Illinois State Normal, Charleston, chairman, Miss Jessie D. Brakensiek, Quincy, and Miss Bernice Harrison, Mt. Carmel, was instructed to report at the afternoon session. The report of the committee was accepted and on the motion of Professor Shaw, University of Illinois, Mr. M. J. Newell, Evanston, was elected as a member of the executive committee for a period of three years. Dr. Lytle, University of Illinois, was appointed as chairman of the mathematics section for 1916.

Dr. E. H. Taylor moved that the committee on standard tests be continued. The motion was seconded and carried. It was found that the expenses of this committee are being paid jointly by the High School Conference Fund as a part of the work of the conference, and by the School of Education of the University of Chicago.

The following papers were presented and discussed: Dr. A. R. Crathorne, University of Illinois, *Algebra from the Utilitarian Standpoint;* Dr. H. O. Rugg, School of Education, University of Chicago, *The Experimental Determination of Standards in First Year Algebra;* Dr. E. H. Taylor, Eastern Illinois State Normal, Charleston, *Report of the Committee Investigating High School Mathematical Libraries;* Mr. H. C. Zeis, McKinley High School, St. Louis, Missouri, *Graphs in Elementary Algebra; Their Purpose and Methods of Teaching Them;* Mr. J. F. Mills, Francis W. Parker School, Chicago, *The Function Notion in Elementary Algebra.*

Abstracts of these papers appear below.

The paper on "Algebra from the utilitarian standpoint," by Dr. A. R. Crathorne of the University of Illinois will be published in full in an early number of School Science and Mathematics, so will be given here only in outline.

Dr. Crathorne said he did not wish to detract anything from the value of algebra in its disciplinary, cultural or ethical sides because he was at present confining his attention to only its utilitarian or practical aspects. He classified the utilities of algebra into four divisions, although he could not be sure they were mutually exclusive or

equally important. His four divisions were (1) *Vocational Utility* or the direct use of algebra in the vocations, trades, and in reading trade journals, (2) *Avocational Utility* or the direct use in the leisure of the ordinary educated man, in his everyday life and reading, (3) *Potential Utility* or the indirect use in furnishing a necessary foundation for a profession, and (4) *Lingual Utility* or the usefulness in giving exercises in clear-cut English expression.

The use of letters for numbers including the evaluation of formulas he thought was the most important topic in algebra, it having great value under each of the four utilities considered.

Algebraic operations, the very heart of algebra, have considerable vocational, considerable avocational, great potential, and considerable lingual value.

Linear equations have great vocational, considerable avocational, great potential, and little lingual value.

Factoring has considerable vocational, little avocational, considerable potential, and little lingual value.

Proportion and variation have great vocational, considerable avocational, great potential, and considerable lingual value.

Graphical representation and the function have great vocational, great avocational, great potential, and little lingual value.

Radicals have little vocational, little avocational, considerable potential, and little lingual value.

Quadratics have little vocational, little avocational, great potential, and little lingual value.

Exponents have little vocational, little avocational, great potential, and little lingual value.

Logarithms have considerable vocational, little avocational, great potential, and little lingual value.

Complex numbers have only considerable potential value.

These relative values were forcefully exhibited to the eye by a shaded diagram on the blackboard. Many interesting illustrations of the use of algebra in different fields were given. His relative values were determined by the frequency with which each topic appears in the different fields. The paper closed with a clever little parable in which the author suggested his opinions on the troubles with algebra teaching and some remedies.

The Experimental Determination of Standards in First Year Algebra

H. O. Rugg, School of Education, University of Chicago

1. *The Outcomes of First Year Algebra*

Believing that some statement of the assumed outcomes of first year algebra should be made the basis for further analysis, the following tentative statement of these outcomes is made:

A. *Immediate, specific and preparatory outcomes.* These include the comprehension, interpretation and manipulation of the specific mechanical operations involved in algebraic solutions; e .g. the four fundamentals as used with various type problems; factoring; removal of parentheses, etc. Certain of these are to be used in many specific algebra problems and in the solution of other mathematical problems; they are to be mastered as tools, preparatory to the taking of other mathematical courses, as well as automatic tools for the solution of all types of "applied" problems. These involve primarily the learning of rules; the formation of specific habits of manipulation.

B. *Immediate generalized outcomes.* These involve recourse to selective, analytic and conceptualizing abilities; ability to apply principles in addition to ability to remember rules and to make certain fundamental habitual adjustments in the solution of general practical and applied problems and in solution of problems of belonging primarily to other mathematical fields.

C. *Remote and less tangible outcomes:* the development of the ability to deal with general number concepts and "think quantitatively"; the development of attitudes of (1) orientation in algebraic or general mathematical fields containing problematic situations; (2) confidence in one's ability to successfully use algebraic symbols in meeting new situations; (3) a broadened intellectual background or perspective for the general cultural comprehension and interpretation of the scientific methods by which technical problems may be solved; (i. e. the development of a "scientific attitude.") (In the preliminary attack on the general problem of standards in this field it is not proposed to consider this third group of outcomes.)

2. *Method of Procedure*

It should be stressed in starting that we regard this investigation to date as of a preliminary nature only and not as one which has enabled us to state definite and final standards. The problem being turned over to the writer so late in the year caused the collection of data and organization of the work to be somewhat hurried. The material presented in this report is therefore more open to criticism of "conditions" under which the data were secured than will be the case in the extension of the investigation during the coming year.

The procedure since April, 1915, may be outlined as follows:

1. Preliminary statement of the aims and the outcomes of the teaching of high school algebra.

2. Determination of basic method of designing and constructing tests for measuring efficiency in first year algebra. (The investigation of the validity of the assumptions underlying Thorndike's "mixed" scale, concerning (a) the rela-

tive difficulty of problems and (b) the validity of testing pupils with a scale composed of both mechanical and applied problems).

3. Classification of the subject matter of first year algebra and the determination of a list of specific operations whose efficiency should be tested.

4. Determination of principles which should govern the selection of test problems.

5. Selection of problems composing each test with preliminary individual experimentation to standardize the arrangement and timing of these problems.

6. Final organization of test sheets and giving of tests in eight school systems in Illinois according to standard directions.

7. The correction of the test papers, original tabulation of scores obtained; statistical treatment of results to state typical conditions; a minute analysis of the specific errors made in each problem.

8. The interpretation of tabular and statistical material and conclusions concerning the progress of the experiment to date.

3. *General Classification of Subject Matter and List of Specific Operations to be Mastered*

The subject matter in first year algebra is first roughly classified to fit the assumed outcomes as follows:

A. *All material of a mechanical nature,* necessitating complete automatism —the establishment of definite groups of habits through continued drill. The writer has worked on the assumption that the following list of operations should be absolutely mastered as a result of the drill given in first year algebra. (There is stated in parentheses after each point the number of the test in which the efficiency of this operation is measured.)

1. Addition and subtraction of positive and negative numbers.
2. Law of signs in multiplication. (Tests 1 and 2.)
3. Law of signs in division. (Omitted.)
4. Addition and subtraction of monomials. (Test 2; Test B-3.)
5. Addition of polynomials. (Omitted.)
6. Removal of parentheses. (Tests 1 and 2.)
7. Multiplication of monomials. (Tests 1 and 2. Test B-17.)
8. Multiplication of polynomials. (Tests 1 and 2.)
9. Multiplication of monomials by monomials, polynomials by polynomials, and monomials by polynomials. (Tests 1 and 2.)
10. Division of monomials. Reduction of quotients. (Test 3, Problems 7, 14, 21, 28.)
11. Use of exponents. (Test 3.)
    - A. Multiplication of monomials
        - a. Without parentheses involving (1) integral numerical exponents; Problems 1, 3, 8, 10, 15, 16, 17, 19, 22, 23, 24.
        - b. With parentheses; problems 4, 11, 18, 25, 27.
        - c. Negative integral exponents; problems 5 and 12.
            - (2) literal exponents; problems 2, 9, 16, 17.
            - (3) fractional exponents; problems 6, 13, 20, 26.

B. Division of monomials involving exponents; problems 7, 14, 21, 23.

12. Division of polynomials. (Omitted.)

13. Squaring of binomials. (Omitted.)

14. Substitution. (Test 5. Test B, problems 1 and 18.)

15. Factoring monomials. (Test 4, problems 2, 7, 12, 17, 22.)

16. Factoring of difference of two squares. (Test 4, problems 1, 6, 11, 16, 21.)

17. Factoring trinomial squares. (Test 4, problems 4, 9, 14, 19, 24.)

18. Factoring trinomials of form $ax^2 + by + c$. (Test 8, problems 3, 8, 12, 16, 20.)

19. Solution of equations of first degree with one unknown. (Test 6, B-14.)

20. Solution of fractional equations of first degree with one unknown. (Test 7.)

21. Solution of quadratic equations. (Test 8.)

B. *All material of an original nature* which, though necessitating constant use of definitely learned systems of habits, involves primarily independent thinking in applying fixed methods to new problematic situations:

1. Original problems leading to equations of first degree with one unknown. (Test B, problems 4, 5, 9, 10, 11, 12, 16, 19, 21, 23, 25.)

2. Original problems involving ratio and proportion. (Test B, problems 8, 13, 15, 22.)

3. Original motion problems. (Test B, problems 16 and 17.)

4. Original problems involving translation of verbal expression into algebraic symbolism. (Nearly all of problems in Test B.)

It should be stressed again that our attention has been primarily centered on the organization of the mechanical problems and that the list given here of the types of original problems is by no means considered exhaustive. Furthermore in connection with such topics as: the graph and its application, the formula, solution of equations in two unknowns, groups of three or more linear equations, etc., we are far from a final decision as to their place in the course of study. It will be the aim of the next year's study to establish a standard in this field.

4. *The Determination of a Valid Method for Measuring Efficiency in the Listed Operations and Types of Problems*

The design of tests to measure efficiency in algebra implies a definite and detailed analysis of the specific operations and processes to be mastered in the study of the subject. The design to be outlined here is based on the analysis made above.

A. *Types of design.* There are at least three types of design.

Type I. The Mixed Scale. Professor E. L. Thorndike assumed the one mixed test, containing "mechanical" problems of many types and "original" problems involving many sorts of fundamental operations will be a valid measure of efficiency in elementary algebra.

Type II. On the other hand, the opposite extreme view concerning algebra tests would have each specific operation tested separately; i. e., such elemental processes as addition of monomials and polynomials, and the other fundamentals would be measured by separate tests.

Type III. Between these two extremes it is possible to occupy a middle ground, by building a test-system which will test the larger and more important operations in a reasonably detailed manner at the same time combining certain of the most elemental operations in one test. The first type of design obviously cannot measure in any valid way many of the more important outcomes of the study of algebra. The second method if carried to its logical extreme would build up a test-system so detailed and cumbersome that no school system could hope to use it in the periodic determination of pupil efficiency. Granted that the ideal "measuring stick" would measure specifically every operation used in algebraic solution, classroom and administrative requirements would prohibit its use. To get a usable measure therefore, we must compromise in our desire for detailed analysis. The writer has imposed the criterion that the giving of the completed algebra standards to any class shall not occupy more than 2 or 3 class periods of 45 minutes each.

B. *Fundamental Criteria for the Design of an Algebra Scale.* To measure algebraic abilities we must have a basis for determining the *relative difficulty* of problems and tests. There are four possible criteria:

1. *The teacher-judgment basis;* 2. "proportion-of-pupils-solving" basis; 3. the quantitative enumeration and objective psychological analysis of the steps and operations involved in various types of problems; 4. the solution of all types of tests by individuals under carefully controlled conditions (i. e., individual-laboratory tests) with detailed individual discussion and comments on particular problems and difficulties. The teacher-judgment method assumes that the relative difficulty of algebraic problems and processes can be determined by the uncontrolled judgment of teachers of algebra. The second method assumes that the relative difficulty of problems will vary directly with the proportion of a large number of pupils able to solve the problems in question correctly.

I. *The teacher judgment basis.* Implicit in the design of all of Professor E. L. Thorndike's "scales" (handwriting, drawing, composition, and algebra) is the assumption that "relative difficulty" or "relative merit" will vary as the proportion of "expert" judges varies who rank certain samples of student work as better or poorer than other samples. To apply the method to algebra he submitted 25 problems of varying types (printed herewith in the order of their final ranking) to 200 teachers of algebra asking them to "rank" the problems in order of difficulty. From the returns he selected a "scale" or nine problems, some of the mechanical type and some applied, some simple and some very complex, by taking the problems D, K, A, T, H, E, I, V, W, which an approximately equal per cent of his group of judges had ranked as of successively greater degree of difficulty. That is, approximately 80% of 200 judges rank K more difficult than D; A more difficult than K, etc., through the list. Thorndike's deduction is, after some statistical manipulation, that the interval of difficulty between each two consecutive problems, D, K, A, etc., is equal and that these problems taken

together represent a scale by which we may measure the efficiency of 20 weeks instruction in elementary algebra. (It should be stated that Professor Thorndike states that a better scale could be designed by using other methods. We are criticizing here Thorndike's acceptance and continued use of this method, *not* his failure to recognize the greater validity of other methods.)

II. *The proportion-of-pupils-solving basis.* The above basis being open to criticism on analytical and psychological grounds, the writer reports herewith a slight beginning that he has made in investigating the validity of the method. The progress made has consisted of comparison of Thorndike's results with those obtained by having students solve the same list of problems. His list of problems (printed herewith in order of his final ranking) have been solved by 169 students in the Joliet Township High School, 92 of whom had just finished first year algebra, 58 had finished it one year before taking the tests, and 19 of whom had studied it two or more years before. The problems were arranged on the sheet in the exact order of difficulty as determined by Thorndike's rank method, giving what little influence the time element might exert to the support of his ranking. Table 1 below summarizes the number and per cent of our group of students who solved each of the first 19 problems correctly. (They were given one class period of 45 minutes to solve the entire list of 25 problems. All attempted to solve more than the first 19 and it is assumed here that the students took sufficient time to these 19 problems to satisfy themselves that they could or could not work the problems. That is, we believe that the element of "pressure" or "drive" due to time factor does not operate here.

Table I.

Number and per cent of 169 High School Pupils Solving Correctly the First 19 of Thorndike's Test Problems. (Problems are lettered)

	D	K	A	L	O	S	T	P	U	G	B	C	Q	H	E	I	R	M	X
								Number											
Total 169........	165	164	155	147	109	78	62	90	103	58	91	32	106	30	14	0	6	..	..
								Per Cent											
92 Pupils........	96.7	94.6	92.2	89.2	61.9	53.3	42.4	60.9	66.3	37.0	51.1	13.0	71.8	24.	12.	0	3	0	0
58 Pupils........	98.3	100	93.1	88.	70.	41.4	30.	46.6	58.6	30.0	53.4	25.9	62.1	10.4	5.2	0	4	0	0
69 Pupils........	97.6	97.	91.7	87.0	64.5	46.1	36.1	53.2	61.0	34.3	53.9	19.0	62.8	17.9	8.3	.0	3.5	0	0

What does the above tabulation show? It shows that the problems instead of being solved successfully by gradually decreasing groups of pupils, fall into a few sharply differentiated groups. Problems D, K, A, L, (Group A) can be solved by nine-tenths or more of the pupils who have had one year's algebra instruction; that problems O, U, Q, and possibly P and B, seem to have for pupils about the same degree of difficulty; in general being solved by about two-thirds as many pupils as the problems of Group A; that T and G are in another class of "difficulty" and that C and H are in still another; that E, I, R, M, X, are again in a class by themselves being so difficult of solution that practically no pupils can work them. Our tabulation confirms Thorndike only in the fact the *order* of problems is the same, the interval of difficulty being decidedly unlike as determined by the two methods. To bring out this point more clearly note the size of the "interval of difficulty" between the 7 problems on his scale and that determined by the other basis.

Table II

Comparison of Relative Difference in Difficulty by Two Methods.

Relative Difference in Difficulty (Thorndike)	Problems	Per cent of Group Solving	Approximate relative difference of difficulty based on proportion of pupils solving
1 difficulty.............	D	87.6	1 difficulty
2 difficulty.............	K	97.0	1 difficulty
3 difficulty.............	A	91.7	1 difficulty
4 difficulty.............	T	36.1	7 difficulty
5 difficulty.............	H	17.9	9 difficulty
6 difficulty.............	E	8.3	10 difficulty
7 difficulty.............	I	0.0	11 difficulty

One outstanding fact appears: The judgment of teachers cannot be taken as a safe criterion for estimating the relative frequency with which pupils can be expected to solve various types of problems. The writer would go further and say: The judgments of teachers cannot be taken as a safe criterion in determining the relative difficulty of algebra problems, and that, of the two methods thus far discussed, the "proportion-of-pupils-solving" method is the more valid. Any method of determining difficulty of problem-solution must be based on a sound and minute analysis of subject matter and of psychological processes involved in the solution. A most elementary analysis would reveal at once the distinction in difficulty-to-the-student, between the large group of mechanical operations which have been made more or less automatic by drill and the group of applied or original problems in which little or no drill has been given. That this analysis is necessary is shown by our tabulation, viz: Practically all pupils can solve the simple mechanical operations of substitution when expressed in "drill" form as in D, K, A; practically no pupils can use exactly the same processes when expressed in "original" form as in R. Approximately half of the students can solve fairly complex equations of the first or second degree in one unknown when expressed in familiar "drill" form; practically no pupils can successfully use the same processes when needed in original or applied problems.

III. *Quantitative Analysis of Operations Involved in Problems:* As a further check on these two methods let us bring the third method of determining "relative difficulty" into review: namely, that of making a minute quantitative

analysis of the problems in question. This would consist of an enumeration of the like and unlike steps to be carried out by the pupil. To illustrate with above problems, we arrange data as in Table III.

Table III

Prob.	Process	No. steps	Substitutions	Total steps	% pupils solving
D	Addition	1	2	3	97.6
K	Addition	1	2	3	97.0
A	Change sign	1	1		
	Transposition	1		3	97.6
L	Transposition	2	2		
	Change signs	2		6	87.0
O	Squaring	1			
	Multiplication	1			
	Subtraction	1		3	64.5
S	Subtraction	1			
	Squaring	1			
	Multiplication	3	4	9	46.1
T	Additions	7			
	Division	1		8	36.1
P	Transposition	3			
	Change sign	3			
	Subtraction	3		9	53.2
U	Recognition of squaring	2			
	Multiplication	4			
	Addition	1		7	61.0
G	Square root	2			
	Multiplication	1	2	5	34.2
Q	Factoring trinominal square	1			
	Multiplication	5			
	Adding like terms	2			
	Transposition	1			
	Change signs	1			
	Subtraction	1		11	62.8
R	Squaring	1			
	Multiplication	1	2	4	3.5

The most casual inspection of the above data is enough to lead to the conclusion that the relative difficulty of algebra problems to pupils cannot be determined by an analysis of the number of like and unlike processes which the pupil must successfully handle. R, is a simple substitution problem, involving direct substitution of two quantities and one multiplication beyond the capacities of 96.5% of these 100 pupils presumably a normal group while Q, a fractional equation including one factoring of a trinomial square, 5 multiplications, 2 additions, 1 substracting, 1 transposition, one changing of sign,—11 operations in all, is solved by two-thirds of the group. Clearly "difficulty" isn't to be determined in terms of number of operations involved.

Thus, we repeat, teacher judgments of the relative difficulty of problems, even when aided by quantitative enumerations of like and unlike processes, cannot be regarded as valid for the construction of "problem-scales" of definitely evaluated units of difficulty. From a detailed investigation of the problem in Free Hand Lettering, the writer is also able to state that the teacher-judgment method of determining merit in samples of student work unaided by an objective standard is to be called in question. This leads him to suspect that results obtained by the method in drawing, and composition which lead to the same unbalanced results as in algebra. Obviously, we have no satisfactory evidence that the seven problems of Thorndike's scale are separated by equal intervals of difficulty. In fact from the point of view of the pupil who has to solve the problems, we know that they are not.

IV. *The Qualitative Psychological Analysis of Problem Solution,* in connection with carefully controlled tests of individuals and complete introspective and interpretative data by the pupil. As a result of the first seven months of investigation of this problem, the writer is convinced that no final standards can be determined without a thorough utilization of this method. The learning process must be studied both objectively and introspectively with the individual student to reinforce and clarify the data secured from class testing. Class testing may result in definite objective standards of the average number of problems "attempted" and "right" in a given unit of time for each specific test given. It will enable the teacher or superintendent to measure his school or system against the norm of many others. But it alone cannot be the sole criterion for the design and construction of the tests themselves.

4. Principles Governing the Selection of Test Problems, and Conduct of Tests. In order that a scale for measuring efficiency in elementary algebra may test successfully mechanical efficiency and independent solution, it must be composed of two general types of test: (1) a specific test series A, which will test the specific manipulative abilities of students in all the basic mechanical operations involved in the solution of algebra problems; (2) a composite test (B) which tests the independent ability of the student in practical or applied problems.

(1) The Specific Test Series A, as designed and presented herewith conforms to the following requirements: (a) It is made up of a series of problem-tests each of which is designed as a specific test for a definite mechanical operation in algebra solution.

(b) Each specific test is made up of a number of problems (10 to 28), each of an elemental nature and involving the operation in question and each of approximately the same degree of difficulty (estimated here of course.)

(c) Where it was impossible to arrange separate tests for all kinds of operations involved (owing to lack of time in class room handling, etc.), those problems which involve closely related operations were grouped in one test and arranged in notation. Thus the student solving twenty problems may be compared with the one solving ten problems.

(d) Each test was designed as a time test, the time being so arranged (estimated) that no student could quite finish the test in the time given, but

so that all could do a considerable number—otherwise the measure of efficiency would have been too coarse. Care was taken to see that all pupils started and stopped the test at the same instant.

(e) The directions were all given orally by the experimenters so that differences in rate of reading and comprehending directions might not complicate results.

(f) Test problems were of the alternative sort wherever possible; i.e., designed to give either right or wrong answers—otherwise careful evaluation and weighing of answers would have been necessary.

(2) The Composite Test B. An ideally designed composite test should be composed of many (say 25) "applied" algebraic problems varying in difficulty by approximately equal intervals and covering all the fundamental types of operations involved in algebraic solution. These problems should not include any of the specific problems of the first test series (A); they should be confined to the abilities of generalization, analysis and application. Application of the rules and operations for which Test A is the immediate test is the primary function of the composite test. As indicated above since we cannot use the teacher-judgment method of the quantitative enumeration of operations in this preliminary construction of the composite test, we are forced to the trial and error method of selecting a priori what seems to be a representative list of applied problems. The primary purpose of this study has been the standardization of Test Series A and what has been done on Test Series B is of the nature only of a trial and error attempt to define the problem and a sound method of approach.

On a basis of the above principles, eight specific tests (Series A) and Test B composed of 25 applied problems were constructed. We enclose herewith a copy of each of the test sheets as taken by the pupils.

Complete tests were taken by 518 pupils who were just finishing first-year algebra, giving us something over 4,500 test sheets in all.

(1) Original tabulations: These tests were next corrected and tabulated in terms of the number of problems "attempted" and "right" for each pupil.

(2) The average number of problems attempted and worked correctly in each test for each school, in one minute, and the averages for the entire group of pupils were next computed, by finding the harmonic mean. For the purposes of this preliminary investigation these averages may be regarded as tentative standards against which to check the efficiency of the teaching process in any school.

(3) The rank of each school was next computed for each test, and the average rank of each school in all tests combined.

(4) The relationship existing between the abilities involved in the different tests was computed by the Pearson product-moment method.

(5) The per cent of the problems attempted which were worked correctly in each test, i. e., the relationship between speed and accuracy in various types of tests was worked out.

(6) The tabulation of particular problems correct in each test and a study of the validity of the method of constructing test A was next taken up.

(7) A detailed tabulation of the particular errors made by each of 100 pupils (selected at random) in each test.

(8) A program of procedure for the continuation of the study.

To accommodate the data of this study to the space of magazine articles, they will be presented in tabular form with brief interpretation and discussion of each table.

Table IV.

The average number of problems per minute "attempted" and "right" for each of 8 schools and for entire group of 518 pupils.

	I		II		III		IV		V	
Sch.	Att.	Rt.	Att.	Rt.	Att.	Rt.	Att.	Rt.	Att.	Rt.
A	8.34	6.6	3.45	1.38	7.5	4.3	2.17	1.38	2.17	1.27
B	7.95	5.3	53.25	1.08	7.19	4.0	2.70	1.60	2.56	1.08
C	10.06	8.0	3.37	1.15	8.57	4.72	1.57	.79	2.71	.98
D	8.39	7.8	93.41	.79	5.0	2.30	2.24	.84	2.38	1.04
E	9.37	9.1	64.37	2.11	4.95	3.05	1.85	1.08	2.44	1.31
F	9.91	8.3	64.48	2.05	7.45	3.85	2.70	2.25	2.80	1.63
G	6.54	4.4	54.41	1.24	6.89	2.59	2.21	1.31	2.63	.96
H	7.67	7.6	73.85	.95	8.39	2.67	2.41	.92	2.72	1.14
Av. of all	8.30	6.36	3.92	1.29	7.06	3.49	2.26	1.19	2.57	1.11

	VI		VII		VIII		No. Minutes per Prob.	
Sch.	Att.	Rt.	Att.	Rt.	Att.	Rt.	Att.	Rt.
A	2.85	1.04	.69	.17	.76	.37	2.45	3.63
B	2.30	.92	.57	.19	1.36	.65	4.0	6.2
C	1.68	.63	.56	.17	1.23	.33	2.65	4.65
D	1.6	.97	.95	.26	1.25	.58	...	...
E	2.7	1.28	.58	.22	.87	.41	2.5	3.65
F	2.17	1.38	.83	.26	1.45	.54	2.97	4.36
G	2.70	1.25	.72	.26	...	...	2.45	5.06
H	3.38	1.35	.85	.21	.99	.41	3.91	5.45
Av. of all	2.50	1.09	.75	.23	1.11	.51	2.99	4.79

Several outstanding facts may be set down: (1) Pupils can correctly solve five times as many problems of the type of Test 1 (simple removal of parentheses and changing of signs) as they can of Tests 2, 4, 5, 6; this in spite of the fact, for example, that the average number and kind of steps and operations necessary for solving each problem in the first two tests is almost the same, being for Test 1, 3.5, and for Test 2, 4.2.

(2) About the same number of problems can be solved per minute in Tests 2, 4, 5, and 6, again regardless of the kinds or number of operations used

in each test. These data reinforce our conclusions above that the relative difficulty of different types of problems cannot be obtained by a quantitative analysis of the problems concerned. Again, we have to date no known method of equating difficulty in different types of algebra problems. These points emphasize our contention that any standard test should be so designed as to test for one or at most two or three fundamental operations.

Furthermore, the above data bear directly on the question, "To what extent is instruction in first-year algebra making habitual certain mechanical processes represented by these tests?" The answer is direct: "To only a very slight extent." Instruction resulting in a capacity for solving correctly less than one factoring problem per minute cannot be said to be efficient,—especially when two of the eight schools are securing a skill three times as great. *It is the higher attainments represented by the work of these schools that are of significance to us, rather than the types, as they point out the possibility of practicable efficiency.*

The blame cannot be laid solely to the door of classroom instruction. Rather it should be laid on the teacher's *organization* of her classwork as expressed through her *teaching emphasis.* The figures above show that no school is efficient or decidedly deficient in perfecting all kinds of processes. All schools are relatively efficient in the perfecting of some of these habitual processes. Clearly our results point to variability of teaching emphasis some teachers spending their time making automatic certain operations, others laying the stress on other processes. Our data point the need of a statement of the standard amount of efficiency to be worked for by each teacher of algebra and of a more intensive study of methods of perfecting the particular manipulations.

Table V

The percent of problems attempted which were worked correctly data given for each test and for each school, and for whole group:

School Tests	1	2	3	4	5	6	7	8
A........	.79	.40	.57	.64	.59	.37	.24	.49
B........	.68	.33	.56	.59	.42	.40	.33	.47
C........	.80	.34	.55	.50	.36	.38	.34	.27
D........	.94	.23	.46	.37	.44	.67	.28	.46
E........	.98	.48	.62	.58	.54	.47	.38	.47
F........	.85	.46	.52	.83	.57	.45	.31	.37
G........	.68	.28	.38	.59	.36	.46	.28	. .
H........	.71	.25	.32	.38	.30	.40	.24	.41
Ave. of all	.82	.35	.50	.56	.45	.45	.30	.42

The data of Table V raise another question concerning the function of first year algebra. We believe it will be generally acceptable to state that ideals as well as habits of accuracy should be one of the outcomes of the study. If this be true, these eight schools seem to be lacking in many respects. In this case also the *relative* attainments are of the most significance. Barring

Test 1, in which a high degree of automatic efficiency seems to be established, it is true that in every test, pupils of some schools solve three times as large a portion of the problems as others. Furthermore the schools solving the largest proportion are, generally speaking, the schools maintaining the highest absolute attainment. This is shown by the fact that the coefficients of correlation between the number of problems worked and the percent of "attempts" worked correctly, are for Tests 1 to 5 respectively, $r = .67$; $r = .81$; $r = .43$; $r = .67$; $r = .43$.

Our data thus point to lax methods of habit formation in the learning of these mechanical processes and a decided lack of emphasis on ideals or attitude of accuracy. But the most pertinent evidence which we have on these points is found in connection with an analysis of (1) the particular problems which pupils are able to solve in each test, and (2) the specific errors made by pupils in solving particular problems.

Table VI

The percent of one hundred pupils (selected at random with an equal proportion from each school represented) who worked correctly certain problems in Tests 1 to 8:

Problem	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Test 1	96	88	82	87	91	84	82	94	99	85	79	98	..	..	..	..	..	..	..	..	..	..	..	..	..
Test 2	57	56	29	44	55	66	54	73	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Test 3	91	50	84	98	14	63	75	90	37	86	85	19	39	..	..	..	..	..	..	..	..	..	..	..	..
Test 4	83	38	32	85	25	78	41	30	74	30	85	34	42	89	49	..	..	..	..	..	..	..	..	..	..
Test 5	55	54	51	54	57	53	57	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Test 6	69	64	66	47	75	64	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Test 7	31	..	35	8	46	2	57	0	39	0	43	9	..	..	..	..	..	..	..	..	..	..	..	..	..
Test 8	91	32	24	51	85	27	51	22	44	37	36	44	68	..	..	..	..	..	..	..	..	..	..	..	..
Test B.............	68	54	89	80	46	38	31	13	61	67	42	28	20	6	12	61	66	16	37	79	33	0	16	8	70

It has been assumed that difficulty to the student will be indicated approximately by the per cent of pupils correctly solving the problems in the tests. Careful study of the above data in Table VI will therefore aid us materially in the redesigning of our standard tests. It was intended (although not exactly carried out) to design the tests in accordance with the principle that the problems should be arranged in cycles, those problems necessitating exactly the same operations recurring every so many problems. This would enable us to compare the record of one pupil with that of another without having specific tests for every particular operation used. The data shown in Table VI for Tests 1, 3, 4, 5, and 7 in the main conform to this practice. That is, those problems utilizing the same specific operations are, in general, correctly solved by approximately the same proportion of pupils. In the remaining tests, 2, 6 and 8, however, while there is a rough paralleling of types-of-operations and proportions-of-pupils-solving there is need for a much more detailed study of the problem. As a definite guide to the standardizing of the tests, the above data will be of great service. The study of the returns to date seem to indicate that the cycle principle must be adhered to strictly throughout the tests. The recurring problems must involve exactly the same steps in solution and the cycles must be of exactly the same size, otherwise the material will offer comparable results.

The standardizing of tests and of the teaching process will furthermore be much clarified by a detailed study of the particular errors which pupils make in solving these problems. Table VII and the descriptive list following present the data on this point.

Table VII

Types and number of errors made by one hundred pupils in working particular problems in Tests 1, 2, 3, 5, and 6:

No. of Error	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total No.	% Total	No. per Prob.
													Test 1														
1	3	2	3	4	2	8	1	1	1	4	15	1	..	2	2	1	2	2	2	3	1	3	4	..	67	28.2	3.0
2	..	10	16	9	..	10	17	..	..	..	8	..	..	..	9	..	9	..	10	1	..	7	8	..	114	47.9	9.5
3	..	..	..	..	7	..	..	5	..	9	..	..	7	..	..	1	..	6	..	..	2	..	..	2	39	16.4	4.9
4	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	6.8	1.0
5	..	..	..	..	..	..	..	..	..	2	3	1	2	..	2	..	..	..	2	1	..	1	..	..	14	5.9	1.8
6	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	2	.8	1.0
Total...	4	13	19	13	9	18	18	6	1	15	26	3	10	2	13	2	11	8	14	5	3	11	12	2	238	...	...
													Test 2														
1	1	2	2	3	2	9	11	7	1	5	..	1	..	..	..	..	..	..	..	..	..	..	..	..	44	7.6	4.0
2	..	..	29	29	19	1	25	9	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	128	22.2	18.3
3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	.2	1.0
4	1	1	2	6	3	10	5	4	3	5	3	2	1	2	..	..	..	..	..	..	..	..	..	..	48	8.3	3.4
5	..	1	2	..	2	1	3	1	2	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	17	3.0	2.1
6	33	35	27	25	23	4	14	12	8	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	183	31.8	16.6
7	7	5	9	4	4	5	6	4	..	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	48	8.3	4.4
8	..	..	..	..	1	1	2	2	..	1	..	3	1	..	..	..	..	..	..	..	..	..	..	..	11	2.0	1.6
9	1	1	40	..	1	1	..	..	..	1	..	4	3	..	..	..	..	..	..	..	..	..	..	..	52	9.0	6.5
10	..	..	..	2	1	2	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	1.4	1.3
11	..	..	2	..	1	5	..	1	..	2	..	1	1	..	..	..	..	..	..	..	..	..	..	..	13	2.3	1.9
12	1	2	3	..	2	4	..	..	1	..	1	2	..	2	..	..	..	..	..	..	..	..	..	..	18	3.1	2.0
13	1	1	1	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	1.0	1.0
Total...	45	48	117	70	60	44	67	41	31	18	5	15	6	10	..	..	..	..	..	..	..	..	..	..	577	...	...

Test 3

No. of Error	Problem Number 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total No.	% Total	No. per Prob.
1	..	2	7	..	..	..	..	..	..	6	..	..	..	..	3	..	13	..	..	..	2	..	..	..	35	4.3	4.4
2	4	53	5	..	..	..	..	7	51	9	..	2	..	..	3	55	..	..	..	..	..	7	..	30	231	28.3	21.0
3	..	..	..	..	..	7	..	1	..	..	14	..	8	1	..	..	..	21	..	9	..	..	..	..	75	9.2	9.4
4	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	7	.9	2.3
5	..	..	1	..	..	3	..	..	..	..	..	..	..	..	..	..	3	..	..	..	2	..	..	..	9	1.1	2.3
6	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	.1	1.0
7	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	8	3	..	..	..	21	2.6	4.2
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	74	..	..	..	2	..	21	..	98	12.0	32.7
9	..	..	..	..	50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51	6.2	25.5
10	..	..	..	..	..	..	..	..	..	..	..	29	..	..	..	..	..	..	..	..	..	..	..	..	29	3.5	29.0
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	3.0	24.0
12	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3	.4	1.5
13	4	11	2	..	5	8	12	2	10	1	..	20	19	4	2	8	7	5	19	5	19	4	3	9	196	24.0	7.5
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	8	1.0	4.0
15	..	..	1	1	2	1	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	10	1.2	1.4
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	4	.5	1.0
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	.1	1.0
18	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	3	.4	3.0
19	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	.4	3.0
Total...	8	66	16	1	57	23	15	10	61	16	14	53	32	6	14	63	97	32	19	22	31	11	25	40	819	...	...

Test 4

Problem Number

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
1	14	10	13	14	11	8	5	5	..	..	..	..	..	..	..	80	22.1	10.0
2	6	5	19	7	7	..	..	..	..	..	..	..	..	..	..	44	12.2	8.8
3	14	11	11	13	7	6	4	8	..	..	..	..	..	..	..	72	19.1	9.0
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	...
5	..	..	1	..	3	..	..	..	..	..	..	..	..	..	..	4	1.1	2.0
6	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	2	.6	1.0
7	10	11	8	9	10	9	5	3	1	..	..	..	..	..	..	66	18.2	7.3
8	10	9	8	11	6	3	1	2	..	..	..	..	..	..	..	50	13.8	6.3
9	2	4	5	4	8	..	1	..	..	..	..	..	..	..	..	24	6.6	4.0
10	1	2	2	5	3	2	..	1	1	..	..	..	..	..	..	17	4.7	2.1
11	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	.3	1.0
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	...
13	1	..	..	..	..	1	..	1	..	..	..	..	..	..	..	3	.8	1.0
	58	53	67	63	55	29	17	18	3	..	..	..	..	..	..	363	...	...

No. of Error	Problem Number 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total No.	% Total	No. per Prob.
Test 5																		
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	...
2	5	34	9	8	10	15	24	10	10	12	6	2	1	..	..	146	39.5	11.2
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	...
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	...
5	..	..	..	1	3	..	1	..	..	..	..	..	..	..	..	5	1.4	1.7
6	..	6	7	21	1	6	10	4	..	3	3	..	..	..	..	61	16.5	6.8
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	...
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	...
9	..	3	1	6	4	4	4	7	2	2	6	4	1	1	1	46	12.5	3.3
10	..	..	..	..	..	..	2	..	..	1	..	..	..	..	..	3	0.8	1.5
11	..	..	9	..	..	..	..	..	1	..	..	..	..	..	..	10	2.5	5.0
12	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0.3	1.0
13	6	10	9	8	6	7	7	6	3	5	3	2	1	..	..	73	19.7	5.6
14	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	4	1.1	2.0
15	..	5	1	3	3	4	1	..	2	1	1	1	..	..	..	22	...	2.2
	12	50	36	49	27	36	49	27	18	24	19	9	3	1	1	371	6.0	...

Description of Errors According to Number in Each Test

Test 1

Number of Errors in Table VII:

1. Incorrect multiplication of figures.
2. Failure to change sign; with — sign outside parenthesis.
3. Failure to use correctly—sign under parenthesis.
4. Failure to follow directions.
5. Error in writing.
6. Used + sign inside parenthesis incorrectly.

Test 2

1. Incorrect multiplication of figures.
2. Failure to change sign with — sign outside parenthesis.
3. Failure to use correctly — sign inside parenthesis.
4. Failure to combine like terms or reduce to simplest form.
5. Error in writing; omission of symbols, etc.
6. Ignoring + or — sign and multiplying across them.
7. Ignorance of operations needed.
8. Addition instead of multiplication, symbol following parenthesis.
9. Omitted multiplication by symbol preceding or following parenthesis.
10. Incorrect addition or subtraction of like terms.
11. Omitted terms in the answer.
12. Faulty multiplication of symbols.
13. Failure to follow directions.

Test 3

1. Incorrect multiplication of figures.
2. Multiplied exponents instead of adding them.
3. Added exponents instead of multiplying them.
4. Divided exponents instead of subtracting them.
5. Error in writing.
6. Multiplied exponents instead of subtracting them.
7. Multiplied denominator instead of numerator.
8. Incorrect addition of exponents, e. g., $9x^m. 7x=63x^m$ instead of $63x^{m-1}$.
9. Regarding x^{-1} as 1 instead of 1/x.
10. Regarding $y^{-2} x^2$ as xy; (2d powers cancelling each other).
11. $(x^0)^2$ called x^2. 0 power equivalent to 1st power.
12. Subtracting exponents instead of multiplying them.
13. General inability to use operation.

14–19. Scattering errors.

Test 5

1. Incorrect multiplication of figures.
2. Incorrect addition or subtraction (— quantity the larger).
3. Substitution of wrong figures.
4. ————

5. Error in writing.
6. Incorrect addition or subtraction (+ quantity the larger).
7. Incomplete.
8. Inability to solve this type of problem.
9. Incorrect substitution.
10. Addition in place of multiplication.
11–13. Scattering errors.

Test 6

2. In transposing terms neglected to change signs.
5. Error in writing.
6. Incorrect addition.
9. Incomplete; not reduced to fractional form.
11. Subtracted instead of added.
13. Inability to handle operation.
14. Multiplied across + or — signs before parentheses.
15. Incorrect division. (Inverted numerator and denominator.)

Discussion of Specific Types of Error

Test 1. Over one fourth of the errors made in this simple test may be ascribed to lack of fixing of the multiplication tables in arithmetic. It is necessary to recall, of course, that Test 1 shows evidence of being fairly well automatized—the only test in the eight of which that can be said. Furthermore, there being but few different algebraic processes involved (only 2 to 5 operations possible), the actual proportion of total errors found to be due to lack of automatization of fundamentals in arithmetic must necessarily be larger. The actual number of errors of any one type is small. Even so, each of the pupils on the average made 2 errors in solving 12 problems of this simple type. It is clear, however, that there is a need for more intensive drill on the process of removing parenthesis, especially of the type of problem having the — sign before the parenthesis. Table VII shows that the problems involving this operation, 6, 7, 11, 19, etc., are the ones in which errors most frequently occur and that the problem is much more difficult to the student if a minus sign is used both inside and outside the parenthesis. The data confirm the view that teachers should analyze problems into constituent operations and drill on those that prove most difficult. The use of the minus sign is the stumbling block in this most simple of algebraic operations.

Test 2. With a but slightly more complex problem and twice as many possible types of error, we find in Test 2 a relatively small proportion of arithmetic errors. In 100 pupils, there were found on the average 4 who made multiplication mistakes in solving each problem. The results of Test 2 confirm our interpretation of Test 1 that the use of the minus sign in removing parentheses is a source of weakness (22.2% of errors were of type 2) and an element of instruction on which greater stress should be laid in drill. One third of the nearly 600 errors made by 100 pupils in solving 12 problems, are made in ignoring a — or — sign before parentheses (error No. 6). The data show that this mistake is common to all of the eight schools but one. Clearly

this is a type of error that should have been eliminated by class drill. To repeat: first-year algebra should make automatic the removal of parentheses. The evidence leads us to think that it is not doing so. If the data presented here are valid, 8% of the 100 pupils show distinct evidence of absolute inability to handle this operation. About 15% of the errors may be ascribed specifically to carelessness in writing, omitting terms, etc. Nearly all the errors made emphasize the careless and slip-shod work done by our pupils, a condition due primarily to weaknesses in the teaching process.

Test 3. In the manipulation of exponents a few definite types of errors occur, vix: Exponents are multiplied when they should be added and vice versa; problems of the type $9x^m \cdot 7x = ?$ are almost invariably solved as $63x^m$ (error No. 8). The use of negative exponents has not been permanently fixed by at least half the pupils (errors Nos. 9 and 10); the use of the zero power has not been learned 24% of all errors made point to an inability to handle exponents in general. The tabulations above emphasize again the need for analysis and sound distribution of teaching emphasis on the difficult operations. Complete mastery of the fundamental operations should be insisted upon.

Test 5. The surprisingly large number of errors made in this test bring out again the weakness in the mastery of the arithmetic fundamentals. On the average over 3 errors are present in solving 8 problems. Furthermore, one pupil in five made an error in addition, subtraction or multiplication in solving 8 problems. Further evidence of careless methods is seen in the fact that 20% of the errors made are errors in substituting wrong numbers and 20% more are due to incomplete solution. As with the preceding relatively simple operations so with simple substitution, many pupils are not able to handle successfully this process. Clearly if elementary algebra should mechanize any "preparatory" operations that are used repeatedly in problems requiring independent thinking, it should mechanize simple substitution. That it is not doing so is strongly suggested by our data.

Test 6. In the solution of simple equations of the first degree with one unknown, 11 pupils out of a hundred neglect to change signs in transposing terms. Two-fifths of all errors made are of this type. The deduction from such data is clear: a primary purpose of elementary algebra should be to make automatically accurate just such processes as changing signs in transposing terms. Teachers interested in improving the outcomes of instruction should use some such method for determining the difficult elements in the "learning process" in algebra, and redistribute their teaching emphasis in conformity to the difficulty of the operations in question. It is just such analyses as we are making here that will suggest to the teacher "relative difficulty" of operations and will point to a sound solution of the problem.

Summary of Conclusions

1. The subject matter of first year algebra should be definitely organized in the form of a specific statement of (a) the mechanical processes which should be drilled until perfectly habitualized; (b) the typical "original" or applied problems in which should be given at least a definite minimum of

practice in the application of the mechanical processes to new problematic situations. (Such an organization is tentatively outlined above).

2. The efficiency of instruction in the mechanical processes may be tested by a series of time tests of the nature of those given herewith, each test being so designed as to test for one, or at most two or three closely related processes.

3. The efficiency of instruction in developing skill in the solution of "original" problems may be measured by a standard scale of representative problems (the relative difficulty of each problem having been determined by some of the methods discussed herewith,) the problems being separated by definitely determined intervals of difficulty.

4. The study leads to the conclusion that the relative difficulty of the problems composing standard tests cannot be determined by the teacher-judgment method. There is evidence to support the view that difficulty-to-the-pupil will be indicated, at least approximately, by the proportion of a large group of pupils solving the problems in question. Difficulty of problems and relative "teaching emphasis" can be determined completely only by a detailed psychological analysis of each of the mental processes involved in the learning of algebra.

5. Standard tests, if representative of the conditions of algebra instruction generally, may be of definite service to the teacher and the supervisory officer by providing (1) objective measurement of the efficiency of instruction; (2) means of comparing efficiency with that of other representative teachers and systems; (3) means of determining particular weaknesses in the learning and teaching processes.

6. The study of errors made by pupils indicates that inefficiency in algebraic solution is due primarily to lack of mastery (habitualization) of a few typical operations which recur frequently in such solution. (Such operations include, e. g.: the use of the minus sign in removing parentheses, principles concerning the addition and multiplication of exponents, the use of negative exponents, the use of the zero power, simple substitution, neglecting to change signs in transposing terms; etc.) This condition points to a need for a thorough study of (1) the psychology of the learning process in algebra; (2) the relative emphasis that should be placed on the teaching of certain processes; i. e. the relative drill emphasis.

7. The preliminary study leads to the conclusion that the *primary* function of *first* year algebra is preparatory and utilitarian; that it must first give perfect mastery of the mechanical "tools" used in the more advanced processes of independent thinking.

At the same time it is recognized that efficiency in the *application* of the mechanical operations can only be developed by *practice in the application of them in new situations.* It is therefore suggested that "original" problems involving the application of even the most elemental operations be given from the start of the instruction.

List of problems used by Professor Thorndike in designing Algebra Scale. (We state with each problem the per cent. of pupils solving the problem correctly).

(97.6%) D. If $a=4$ and $b=2$ what does $a+b$ equal?

(97.0%) K. If $a=4$ and $b=0$ what does $a+b=$?

(91.7%) A. If $x+3a=5a$ what does $x=$?

(87.0%) L. If $3x+4=2x+8$ what does $x=$?

(64.5%) O. If $a=3$ and $b=2$ what $a^2-ab=$?

(62.8%) Q. If $\dfrac{4}{x+2}+\dfrac{7}{x+3}=\dfrac{37}{x^2+5x+6}$ what does $x=$?

(61.0%) U. If $\dfrac{x}{a+b}=a-b$ what does $x=$?

(53.9) B. The circumference of a circle is 2 r. Pi.=3 1/7. r= the length of the radius of the circle in question. If the diameter of a bicycle wheel is 28 inches, how many inches in the circumference?

(53.2%) P. If $x-2a+b=2x+2b-4a$ what does $x=$?

(46.1%) If $a=6$ and $b=1$ what does $2ab-ab^2=$? Prob. S.

(36.1%) T. Find the average midnight temperature for the week in which the daily midnight temperatures were 15, 3, 0, —7, —9, 6 and 17 degrees.

(34.3%) G. If $a=6$ and $b=3$ what does $\sqrt{a}\sqrt{2b}=$?

(19.0%) C. If $\dfrac{6x+7}{5}-\dfrac{2x-1}{10}=4\ 1/2$ what does $x=$?

(17.9%) H. If $\dfrac{1}{a}-\dfrac{1}{x}=\dfrac{1}{x}-\dfrac{1}{b}$ what does $x=$?

(8.3%) E. If $2+\dfrac{\dfrac{x}{a}-1}{\dfrac{2}{a}}=O$, what does $x=$?

(3.5%) R. Let 1 stand for the safe load that can be hoisted by a hemp rope. Let c stand for the circumference of the rope. If $1=100c^2$ for any rope how many pounds are a safe load for a hemp rope 2 1/4 inches in circumference?

(0.0%) O. A man has "a" hours to spend riding with a friend. How far can they ride together, going out at the rate of "b" miles an hour and just covering the return trip at the rate of "c" miles and hour?

(M) If $\frac{x+a}{x-a} - \frac{x-a}{x+a} - \frac{x^2}{a^2-x^2} = 1$ what does $x=$?

X. At what time between 6 and 6:30 o'clock are the hands of a clock at right angles to each other?

(Y) If $x=\frac{a+b,}{2}$ what does $\frac{x-2}{x-b} - \frac{x-2a+b}{x+a-2b}$ equal?

(J) If $\frac{a+b}{b+c} = \frac{c+d}{d+a}$, prove that $a=c$ or that $a+b+c+d=0$.

(V) How much water must be added to a pint of "alcohol, 95% pure" to make a solution of "alcohol 40% pure"?

(F) A cube containing eight cubic inches was plated with copper. The difference in the weights of the copper before and after the plating was 0.139 lbs. 1 cubic inch of copper weighs 0.315. Form an equation from which the approximate thickness of the copper plating could be calculated. State whether the approximate thickness of the copper plating could be calculated. State whether the approximate estimated thickness by your equation would be less or more than the exact thickness.

(Problems N and W are omitted from this list).

Test 1

(1) $5(4x-2) =$
(2) $-4(3x-4) =$
(3) $-7(2+5x) =$
(4) $-3(5-8x) =$
(5) $6(-3x-5) =$
(6) $-6(-4x-7) =$
(7) $-3(8+x) =$
(8) $5(-7+x) =$
(9) $7(2-5x) =$
(10) $9(-8x-1) =$
(11) $-9(-7x+1) =$
(12) $8(5x+4) =$
(13) $3(-2+7x) =$
(14) $6(3x+8) =$
(15) $-2(-4x+9) =$
(16) $3(5-8x) =$
(17) $-4(x+9) =$
(18) $7(-1-8x) =$
(19) $-9(-x+6) =$
(20) $8(6x-9) =$
(21) $7(-x-4) =$
(22) $-2(-7x+8) =$
(23) $-6(3+11x) =$
(24) $5(-9-x) =$

Test 2

(1) $3x+(x+1) =$
(2) $4x+(x-2) =$
(3) $n-(-7n+4)n =$
(4) $2y-(y+3) =$
(5) $5z-(z-5) =$
(6) $3y(y-5)-y^2 =$
(7) $4x-6(x+1) =$
(8) $7x-5(x+7) =$
(9) $8z-(-4z+7) =$
(10) $-6y+6(4y-1) =$
(11) $x(x-1)-3x =$
(12) $(n+1)5n-n^2 =$
(13) $4-(4n-6)n =$
(14) $a+4a(-a-7) =$
(15) $n-4(n03) =$

Test 3

Perform the indicated operation in the following problems:

(1) $a^3 a^5 =$
(2) $a^x a^y =$
(3) $5a^7 .\ 6a^6 =$
(4) $(n^2)^2 =$
(5) $x^{-1} x^1 =$
(6) $(a^6)^{\frac{1}{3}} =$
(7) $\frac{a^3}{a^2} =$
(8) $b^2 b^8 =$
(9) $x^a x^b =$
(10) $7a^8 . 8a^7 =$
(11) $(t^3)^1 =$
(12) $y^{-2} x^2 =$
(13) $(x^3)^{\frac{1}{2}} =$
(14) $\frac{x^3}{x} =$
(15) $c^9 c^4 =$
(16) $x^m x^4 =$
(17) $9x^m . 7x =$
(18) $(x^4)^3 =$
(19) $y^0 y^3 =$
(20) $(a^2)^{\frac{1}{2}} =$
(21) $\frac{y^3}{y^4} =$
(22) $x^2 x^1 =$
(23) $a^7 a =$
(24) $8x^m\ 3x^2 =$
(25) $(b^2)^4 =$
(26) $x^{\frac{1}{2}} x^{\frac{3}{2}} =$
(27) $(x^0)^2 =$
(28) $\frac{c^7}{c^3} =$

Test 4. Factoring

Write the factors of each of the following to the right of the examples.

(1) $x^2 - 64$
(2) $5x^2 + 15x^3$
(3) $ax^2 + bx^2 + ay^2 + by^2$
(4) $x^2 + 4x + 4$
(5) $(x+6)^2 - 9$
(6) $x^2 - 16$
(7) $8x^2 - 12x^4$
(8) $ax^2 - bx^2 + ay^2 - by^2$
(9) $y^2 - 8y + 12$
(10) $(x+y)^2 - 4z^2$
(11) $y^2 - 4$
(12) $6a^3 + 9a^3$
(13) $ax^2 + ay^2 - bx^2 - by^2$
(14) $x^2 + 11x + 28$
(15) $(p-q)^2 - (x-y)^2$
(16) $16a^2 - b^2$
(17) $9x^2 - 6x^5$
(18) $p^5 + pq^4 - p^4q - p^5$
(19) $x^2 - 5x - 24$
(20) $a^2b^2 - (c-d)^2$
(21) $81 - x^2$
(22) $12x + 18x^4$
(23) $p^3 + p^2q + pq^2 + q^3$
(24) $x^2 + 6x - 27$
(25) $49a^2 - (c+d)^2$

Test 5

(1) If $a=3$ and $b=2$ what does $a^2 - 3ab$ equal?
(2) If $c=6$ and $d=1$ what does $2cd - cd^2$ equal?
(3) If $a=4$ and $b=3$ what does $a^2 - ab^2$ equal?
(4) If $e=5$ and $f=4$ what does $ef - 2ef^2$ equal?
(5) If $a=3$ and $b=4$ what does $ab - 2a^2b$ equal?
(6) If $x=4$ and $y=6$ what does $2x^2 + xy$ equal?
(7) If $m=1$ and $n=3$ what does $3m^2 + 4mn$ equal?
(8) If $r=2$ and $s=0$ what does $5r^2 + rs^2$ equal?
(9) If $p=3$ and $q=5$ what does $2pq + pq^2$ equal?
(10) If $t=4$ and $u=5$ what does $2u^2 - 3tu$ equal?

Test 6

Solve each of the following for x. Leave answer in form of a fraction.

(1) $-13x = 7$
(2) $4x + 3 = 9x - 6$
(3) $7x - 5 + 2x = 13$
(4) $4 + 5(x-3) = 6$
(5) $18x = -31$
(6) $x - 4 = -8x + 14$
(7) $8x = 17 + 19x + 5$
(8) $4(-x+4) = -6x+8$
(9) $-12x = -17$
(10) $5 + 3x = 6x - 13$
(11) $3x = 27x + 7 - 55$
(12) $-5(4x+7) = 8x - 25$
(13) $4x = -37$
(14) $8x - 2 = 12x + 14$
(15) $25 - 6x + 5 = 9x$
(16) $(9x-5) = 6x - 2$
(17) $9(-x+2) = 4x - 18$
(18) $52x = 97$
(19) $17 + x - 5 = 4x$
(20) $7 + 18(x-3) = 5x$

Test 7

Solve each of the following for x. Leave answer in form of fraction, $x = \frac{-17}{9}$ etc.

(1) $\frac{4x-2}{3} = \frac{x-3}{4}$

(2) $\frac{-6(2x-3)}{5} + \frac{-3(2x+5)}{4} = \frac{2x+4}{10}$

(3) $\frac{x+1}{x-1} = \frac{5}{3}$

(4) $6x - 5 \quad \frac{6x+11}{4} = 13x$

(5) $\frac{3x-4}{6} = \frac{x+2}{4}$

(6) $\frac{5(x-7)}{7} - \frac{4(3x+6)}{4} = \frac{-4(x-3)}{14}$

(7) $\frac{x-1}{x+1} = \frac{3}{4}$

(8) $1 - \frac{-6(4-6x)}{5} = 4x - 3$

(9) $\frac{7x-1}{6} = \frac{8x+5}{9}$

(10) $\frac{-3(x+4)}{6} - \frac{8(2x-5)}{7} = \frac{-4(7x+4)}{21}$

(11) $\frac{x+2}{x-2} = \frac{3}{7}$

(12) $\frac{-4x-5}{7} = 9 - \frac{3(4-x)}{3}$

Test 8

Solve each of the following for x.

(1) $x^2 - 81 = 0$
(2) $x(x - 2) = 0$
(3) $x^2 + px = 6p^2$
(4) $x^2 - 7x = -12$
(5) $x^2 - 121 = 0$
(6) $x(x + 7) = 0$
(7) $x^2 - 11x = -30$
(8) $x^2 - 5px = 24p^2$
(9) $4x^2 - 196 = 0$
(10) $x^2 - 3x = 0$
(11) $x^2 + 4x + 45 = 0$
(12) $x^2 + 5ax = 6a^2$
(13) $x^2 - a^2 = 0$
(14) $x(x - 3) = 0$
(15) $x^2 - 15x = -50$
(16) $x^2 + b^2 = ax$
(17) $x^2 + a = 0$
(18) $5x^2 + 7 = 3x^2 + 25$
(19) $x^2 - 7x - 60 = 0$
(20) $x^2 - ax = b$

Algebra Test B.

Work each of the following problems in order as numbered. Do not omit any that it is possible for you to do. If you find you really cannot work any problem do not waste too much time on it but pass on to the next. Make sure that you cannot work it before you leave it, however. Do your figuring on the blank paper, but write your answer on this sheet in the space marked, Answer. Work as rapidly and as accurately as you can.

1. If a boy is x years old how old will he be in 5 years? Answer...... ....
2. An aeroplane that can fly 58.2 miles an hour in still air is retarded by a wind 9.7 miles an hour. At what rate does the aeroplane fly. Answer....................
3. If you represent a number by x, how will you represent 5 more than 4 times the number? Answer....................
4. Four increased by three times a certain number equals nineteen. Find the number. Answer....................
5. Four years ago a man was seven times as old as his son and his son is now 8 years old. Find the age of the father. Answer........ ....
6. A train leaves Pittsburg for the West at the same time that one leaves for the East. The former travels at the average rate of 42 miles an hour and the latter at the rate of 38 miles an hour. In how many hours will they be 240 miles apart? Answer....................
7. Which increases more rapidly when r increases, the area of a circle or the circumference? Answer.................... Why.............. ....
8. A line 21 inches long on a certain map corresponds to 22 miles. A line 7 1/2 inches long corresponds to how many miles? Answer........ ....
9. Eight times a certain number equals 45 diminished by the number. Find the number. Answer....................

10. A father is 23 years older than his son, and the sum of their ages is 49 years. How old is each? Answer. Father is....................
Son is....................

11. The perimeter of a rectangle is 256 feet. It is 3 times as long as it is wide. Find its dimensions. Answer....................

12. A can do a piece of work in 3 days and B in 4 days. In how many days can both do it working together? Answer....................

13. State whether the quantities mentioned below are directly or inversely proportional:

(a) The number of yards of a certain kind of silk and the total cost. Answer....................

(b) Time a train needs to travel 10 miles and speed of train. Answer ....

(c) Length of a rectangle of constant width and area of rectangle. Answer....................

(d) Distance travelled by train moving at uniform rate and the time. Answer....................

14. Give the formula $a = \frac{1\,h}{2}(b - b^1)$, find the formula for b^1. Evaluate the result for $a = 40$; $h = 8$; $b = 6$.
Answer....................

16. If a boy 4 3/4 feet tall casts a shadow 4 1/2 feet long at the same time that a school building casts a shadow 67 1/2 feet long, how high is the school building? Answer....................

16. Find two consecutive numbers whose sum is 157. Answer....................

17. If a train moves at the rate of r miles an hour how far will it move in t hours? Answer....................

18. The circumference of a circle is given by $2 \Pi r$; Π is 3 1/7 and r is the radius of the circle. If the diameter of a bicycle wheel is 26 inches how many inches in the circumference. Answer................

19. A post is 1/5 of its length in the ground, 1/2 of its length in water, and 9 feet above water. Find its length. Answer....................

20. Find three consecutive numbers whose sum is 63. Answer....................

21. A rectangular field is 10 yards wide and another is 12 yards wide. The second is 5 yards longer than the first and the sum of their areas is equal to 390 square yards. Find the length of each. Answer....................

22. If a boy lying down with his eye on the ground, sights over the top of a ten foot pole, held vertically 6 1/4 feet from his eye, and can just see over the top of a tree 37 1/2 feet from his eye, how high is the tree? Answer....................

23. A cistern can be filled with two pipes in m and n minutes respectively. In how many minutes can it be filled by the pipes together? Answer ....

24. The areas of two circles are proportional to the squares of their radii. If the radii of the two circles are to each other as 4 : 7 and the area of the smaller circle is 8 square inches, what is the area of the larger? Answer....................

25. Find the number whose third and fourth parts added together make 14. Answer....................

Professor Shaw emphasized a distinction between the amounts of attention necessary in, say, adding four numbers and adding four hundred numbers. Can students hold their attention to the longer problems in which operations are repeated so often? The analysis of the student's own mind in the class-room should be emphasized here. For this reason a mixed test measures general ability rather than mathematical ability. This analysis would well supplement the tables given by Dr. Rugg.

Miss Brakensiek said that factoring is over-emphasized as is shown by the relatively large number of test problems relating to this subject. Miss Brakensiek also called attention to the fact that we must be fair to the students who get only one year of high school algebra. This necessarily means teaching in ways which we would not otherwise teach and as a result the so-called mechanical side must not be over-emphasized to the exclusion of the thought side of algebra.

A Bibliography of Mathematical Works Suitable for High-School Libraries

Prepared by E. H. Taylor

This bibliography is based on the one published in 1911 by Professors David Eugene Smith and Clifford Brewster Upton of Teachers College, Columbia University. Nearly all of the titles and the accompanying comments of the original bibliography have been retained, and a number of more recent titles have been added.

Two lists of books that are thought to be especially valuable for high school teachers and students have been added. One of these lists can be bought for about ten dollars and the other for about twenty-five dollars.

Books on Algebra for High-School Students

Auerbach. Graphic Mathematics. Allyn and Bacon. $0.35. An excellent treatment, covering the high-school needs.

Boole. Philosophy and Fun of Algebra. C. W. Daniel, London. 2 shillings.

Dupuis. The Principles of Elementary Algebra. Macmillan. $1.25. This valuable little work contains several topics not found in the ordinary algebra.

Fine. Number Systems of Algebra. Heath. $1.00. An excellent introduction to the notions of higher algebra.

Nipher. Introduction to Graphic Algebra. Holt. $0.60. Broader than the usual elementary graphic work in algebra.

Radhakrishna. Elementary Algebra. Srinivasa, Varadachari & Co., Madras. About $2.00. Somewhat different from the usual American text-book.

Schultze. Graphic Algebra. Macmillan. $0.80. An interesting and suggestive treatment of graphic work.

Books on Algebra for Teachers

Bôcher. Introduction to Higher Algebra. Macmillan. An excellent book for the teacher who wishes to extend his scholarship.

Burnside and Panton. Theory of Equations. 2 vol. Longmains. $6.00. The best English work on the subject. It throws a great amount of light upon the elementary work in algebra.

Chrystal. Algebra. 2 vol. Macmillan. $8.50. A gold mine of information and material in all lines of elementary and colloge algebra.

Dedekind. Essays on Number. Open Court Pub. Co. $0.75. This translation of a classical work on number is very valuable for the teacher because it sets forth so clearly the nature of the irrational as met in the chapter on radicals.

Dickson. Elementary Theory of Equations. Wiley. $1.75.

Fine. College Algebra. Ginn. $1.50. One of the best works for the teacher who wishes to have at hand a rigid treatment of all the leading topics of elementary algebra.

Nunn. The Teaching of Algebra (including Trigonometry). Longmans. $2.00.
Exercises in Algebra. I (including Trigonometry). Longmans. $1.00.
Exercises in Algebra II. (including Trigonometry). Longman's. $1.75.
Contains much useful material.

Phillips and Beebe. Graphic Algebra. Holt. $1.60. A work that carries graphic algebra beyond the limits prescribed by text-books. Valuable as showing in an elementary manner the general field of graphic work in algebra.

Reid. The Elements of the Theory of Algebraic Numbers. Macmillan. $3.50.

Books on Geometry for High School Students

Casey. The First Six Books of the Elements of Euclid. Longmans. $1.40.

Casey. Sequel to Euclid. Longmans. $1.10. An excellent work for students, carrying geometry beyond the usual limits of the high school and a little way into the domain of modern geometry.

Dupuis. Elementary Synthetic Geometry. Macmillan. $1.25. Contains some interesting topics not usually found in geometry.

Failor. Inventional Geometry. Century Co. $0.60.

Godfrey and Siddons. Modern Geometry. Putnam. $1.50.

Henrici. Congruent Figures. Longmans. $0.50. A pleasant little primer presenting geometry from the standpoint of symmetry and duality.

Manning. Geometry of Four Dimensions. Macmillan. $2.00.

Manning. Non-Euclidean Geometry. Ginn. $0.75. An elementary presentation of geometry as it would appear if we should deny the parallel postulate of Euclid.

Row. Geometric Paper Folding. Open Court Pub. Co. $1.00. A work that shows how, by means of paper folding, a considerable range of geometry may be covered.

Young & Young. First Book of Geometry. Dent. $0.50. An elementary concrete presentation of geometry, making use of paper folding. Beautifully illustrated.

Books on Geometry for Teachers

Carus. Foundations of Mathematics. Open Court Pub. Co. $0.75. An interesting treatment of the philosophy of geometry.

Frankland. Theories of Parallelism. Clay. (Cambridge Press). $0.90. The best work in English on the various methods of treating the question of parallels.

Frankland. The First Book of Euclid's Elements. Clay (Cambridge Press). $1.50. An excellent little work, scholarly in every respect. If one does not have the monumental work of Heath, he should certainly have this.

Halstead. Rational Geometry. Wiley. $1.50. A text-book of geometry based on Hilbert's foundations.

Heath. The Thirteen Books of Euclid's Elements. Clay (Cambridge Press). 3 vol. $13.50. The best single work for a teacher of geometry to own. A work of the highest scholarship. It discusses from the historical and scientific standpoint all of the definitions, axioms, postulates, and propositions found in Euclid's "Elements."

Hilbert. Foundations of Geometry. Open Court Pub. Co. $1.00. A scientific treatment of the axioms of geometry.

Klein. Famous Problems of Elementary Geometry. Ginn. $0.50. A somewhat elementary treatment of the three great problems of ancient geometry, the squaring of the circle, the duplication of the cube, and the trisection of the angle.

Manning. Fourth Dimension Simply Explained. Munn. $1.50. An interesting collection of essays, each giving a popular explanation of the fourth dimension.

Russell. Foundations of Geometry. Clay (Chambridge Press). $2.00. A standard English work on this subject.

Withers. Euclid's Parallel Postulate. Open Court Pub. Co. $1.25. Gives the nature, validity, and place in geometric systems of this famous postulate.

Books on the Teaching of Mathematics, Primarily for Teachers

Benedict and Calhoun. Teaching of Plane Geometry. University of Texas, Austin. Discusses the reasons for studying geometry and methods of teaching.

Branford. A Study of Mathematical Education. Clarendon Press, Oxford. $1.25. A work by one of the inspectors of schools in England, giving some idea of the present reform movement in that country.

Breslich. Supervised Study as a Means of Providing Supplementary Individual Instruction. In the Thirteenth Yearbook of the National Society for the Study of Education, Part I. University of Chicago Press. $0.80. The best discussion of supervised study in mathematics obtainable.

Brooks. Philosophy of Arithmetic. Sower, Potts, $2.50. Although setting forth the educational ideals of a generation ago, this book is suggestive. It contains a considerable amount of interesting historical material.

Clifford. Common Sense of the Exact Sciences. Appleton. $1.50. A work by one of the best of England's mathematicians of the middle of the nineteenth century. It contains many suggestions as to the foundations of secondary mathematics.

Brown and Coffman. How to Teach Arithmetic. Row, Peterson and Co. $1.25. One of the best books on this subject.

Carson. Mathematical Education. Ginn. $0.75. A collection of very valuable essays. Should be owned by every teacher of secondary mathematics.

DeMorgan. On the Study and Difficulties of Mathematics. Open Court Pub. Co. $1.25. A reprint of a well known work of the middle of the nineteenth century. While many of the problems have changed since DeMorgan wrote, the book is a valuable one for the teacher.

Evans. The Teaching of High School Mathematics. Houghton Mifflin. $0.35.

Halsted. On the Foundation and Teaching of Arithmetic. Open Court. $1.00.

International Commission on the Teaching of Mathematics

American Reports. United States Bureau of Education.

The following bulletins have appeared:

Mathematics in the Elementary Schools of the United States. Bulletin No. 13, 1911, 15 cts.

Mathematics in the Public and Private Secondary Schools of the United States. Bulletin No. 16, 1911. Out of print.

Training of Teachers of Elementary and Secondary Mathematics. Bulletin No. 12, 1911. Out of print.

Mathematics in the Technical Secondary Schools of the United States. Bulletin No. 4, 1912. 5 cts.

Examinations in Mathematics Other than Those Set by the Teacher for His Own Classes. Bulletin No. 8, 1911. Out of print.

Influences Tending to Improve the Work of the Teacher of Mathematics. Bulletin No. 13, 1912. 5 cts.

Mathematics in the Technological Schools of Collegiate Grade in the United States. Bulletin No. 9, 1911. Out of print.

Undergraduate Work in Mathematics in Colleges of Liberal Arts and Universities. Bulletin No. 7, 1911. Free.

Mathematics at West Point and Annapolis. Bulletin No. 2, 1912. Out of print.

Graduate Work in Universities and in Other Institutions of Like Grade in the United States. Bulletin No. 6, 1911. 5 cts.

Report of the American Commissioners of the International Commission on the Teaching of Mathematics. Bulletin No. 14, 1912. 10 cts.

Curricula in Mathematics. Bulletin No. 45, 1914. 10 cts. This bulletin gives a comparison of courses in the countries represented in the International Commission.

Mathematics in the Lower and Middle Commercial and Industrial Schools of Various Countries Represented in the International Commission. 15 cts.

These reports give a view from authoritative sources of the teaching of mathematics in the United States.

International Commission on the Teaching of Mathematics

British Reports

The Teaching if Mathematics in the United Kingdom

Wyman & Sons, London

The following papers have appeared:

No. 1. Higher Mathematics for the Classical Sixth Form.
By Mr. W. Newbold. (1911.) Price 1d.

No. 2. The Relations of Mathematics and Physics.
By Dr. L. N. G. Filon. (1911.) Price 1d.

No. 3. The Teaching of Mathematics in London Public Elementary Schools.
By Mr. P. B. Ballard. (1911.) Price 2d.

No. 4. The Teaching of Elementary Mathematics in English Public Elementary Schools.
By Mr. H. J. Spencer. (1911.) Price 2½d.

No. 5. The Algebra Syllabus in the Secondary School.
By Mr. C. Godfrey. (1911.) Price 2½d.

No. 6. The Correlation of Elementary Practical Geometry and Geography.
By Miss Helen Bartram. (1911.) Price 1d.

No. 7. The Teaching of Elementary Mechanics.
By Mr. W. D. Eggar. (1911.) Price 1d.

No. 8. Geometry for Engineers.
By Professor D. A. Low. (1911.) Price 1½d.

No. 9. The Organisation of the Teaching of Mathematics in Public Secondary Schools for Girls.
By Miss Louisa Story. (1911.) Price 1½d.

No. 10. Examinations from the School Point of View.
By Mr. Cecil Hawkins. (1911.) Price 9d.

No. 11. The Teaching of Mathematics to Young Children.
By Miss Irene Stephens. (1911.) Price 1½d.

No. 12. Mathematics with Relation to Engineering Work in the Schools.
By Mr. T. S. Usherwood. 1912. Price 2d.

No. 13. The Teaching of Arithmetic in Secondary Schools.
By Mr. G. W. Palmer. (1912.) Price 2½d.

No. 14. Examinations for Mathematical Scholarships.
By Dr. F. S. Macaulay and Mr. W. J. Greenstreet. (1912.) Price 3d.

No. 15. The Educational Value of Geometry.
By Mr. G. St. L. Carson. (1912.) Price 1½d.

No. 16. A School Course in Advanced Geometry.
By Mr. C. V. Durell. (1912.) Price 1½d.

No. 17. Mathematics at Osborne and Dartmouth.
By Mr. J. W. Mercer and Mr. C. E. Ashford. (1912.) Price 2½d.

No. 18. Mathematics in the Education of Girls and Women.
By Miss E. R. Gwatkin, Miss Sara A. Burstall, and Mrs. Henry Sidgwick. (1912.) Price 2½d.

No. 19. Mathematics in Scotch Schools.
By Professor George A. Gibson. (1912.)

No. 20. The Calculus as a School Subject.
By Mr. C. S. Jackson. (1912.) Price 1½d.

No. 21. The Relation of Mathematics to Engineering at Cambridge.
By Professor B. Hopkinson. (1912.) Price 1½d.

Jourdain. The Nature of Mathematics. Dodge Pub. Co. $0.25.

Lagrange. Lectures on Elementary Mathematics. Open Court Pub. Co. $1.00. Although this is a reprint of a work written a century ago, it is of value to every teacher. Lagrange was one of the greatest mathematicians of his time, and his ideas are still inspiring.

McCormack. Why Do We Study Mathematics. A Philosophical and Historical Retrospect. Cedar Rapids, Iowa. Also in the Proceedings of the National Education Association. No more scholarly article on this subject has appeared in recent years. It should be read and mastered by every teacher of high school mathematics.

McLellan and Dewey. Psychology of Number. Appleton. $1.50. A discussion of the psychological principles involved in the teaching of number.

McMurry. Special Method in Arithmetic. Macmillan. $1.00. A suggestive work for the elementary teacher.

Moritz. Memorabilia Mathematica. Macmillan. $3.00. Mathematical quotations.

Perry. England's Neglect of Science. Unwin. $1.25. This book had much to do with the beginning of the present reform in the teaching of mathematics in England.

Perry. Teaching of Mathematics. Macmillan. $0.70. This gives a good idea of the so-called "Perry Movement" for making mathematics more practical.

Poincare. Science and Hypothesis. Science Press. $1.50. Contains chapters on the nature of mathematical ideas and of mathematical reasoning.

Poincare. The Value of Science. Science Press. $1.50.

Report of the National Committee of 15 on Geometry Syllabus. Reprinted from The Mathematics Teacher, Vol. V, No. 2, December, 1912. Should be read by every teacher of geometry.

Schultze. The Teaching of Mathematics in Secondary Schools. Macmillan. An excellent book that contains much usable material.

Smith, D. E. Teaching of Elementary Mathematics. Macmillan. $1.00. Relates to the general field of arithmetic, algebra, and geometry.

Smith, D. E. Teaching of Arithmetic. Teachers College Bureau of Publications, $0.75. Considers the important questions of the day in the teaching of arithmetic.

Smith, D. E. Teaching of Geometry. Ginn. $1.25. An extended treatment of the problem of teaching geometry. It is rich in suggestions for applied geometry. The question of basal propositions is considered, and the most important of these propositions are discussed.

Stamper. History of the Teaching of Elementary Geometry. Teachers College Bureau of Publications. $1.50. A valuable work showing the changing point of view with respect to this subject, from the classical period to the present.

Stamper. The Teaching of Arithmetic. American Book Co. $1.00.

Stone. Arithmetical Abilities and Some Factors Determining Them. Teachers College Bureau of Publications. $1.00. Tests for measuring the abilities of children in arithmetic.

Whitehead. Introduction to Mathematics. Holt. $0.50. Contains interesting and valuable discussions of important notions. Emphasizes the value of mathematics.

Young, J. W. A. Lectures on the Fundamental Concepts of Algebra and Geometry. Macmillan. $1.60. An excellent and readable treatise.

Young, J. W. A. Teaching of Mathematics. Longmans. $1.50. A scholarly treatment of the teaching of elementary and secondary mathematics.

Young, J. W. A. Mathematics in the Schools of Prussia. Longmans. $0.80. A brief survey of the work done in the best German schools, and a comparison of this work with that done in America.

Young, J. W. A. Mathematical Monographs. Longmans. $3.00. This work meets a want long felt by teachers. It considers such questions as theory of parallels, fundamental concepts of geometry, the transcendence of *e*, and the algebraic equation.

Books on Applied Mathematics, Containing Problem Material

Breckenridge, Mersereau, and Moore. Shop Problems in Mathematics. Ginn. $1.00. This is the best work of its kind in English and it should be in every school library for the use of teachers and mathematical clubs.

Breed & Hosmer. Principles and Practice of Surveying. 2 vols. Wiley. $5.50. A standard modern text-book on surveying, giving many applications of mathematics. An excellent reference book for the high-school teacher who wishes to know something of surveying practice.

Castle. Manual of Practical Mathematics. Macmillan. $1.50. An interesting presentation of practical mathematics written for English schools. Contains some good problems.

Consterdine & Barnes. Practical Mathematics. Murray, London. $0.75. An elementary treatment for English schools.

Cox. Manual of the Slide Rule. Keuffel & Esser. $0.50. Practical directions for operating the slide rule.

Harrison. Practical Plane and Solid Geometry. Macmillan. $0.75. A book written to meet the requirements in practical geometry in England.

Larard & Golding. Practical Calculations for Engineers. Griffin, London. $1.75. Deals with technical mathematics and contains a good list of problems.

Lodge. Easy Mathematics, Chiefly Arithmetic. Macmillan. $1.10. Source book for problems.

Richards. Navigation and Nautical Astronomy. American Book Co. $1.00. An elementary treatise on the application of mathematics to these topics. Good problem material.

Saxelby. Practical Mathematics. Longmans. $2.25. This is one of the best of the recent English works upon the subject. While it does not exactly meet the demands of the American school it will be found very helpful to teachers.

Books on the History of Mathematics

Allman. Greek Geometry from Thales to Euclid. Longmans. $2.75. A very scholarly treatment of the formative period of elementary geometry.

Ball. History of Mathematics. Macmillan. $3.25. The best written general history of mathematics in English. It should be in every high school and public library.

Ball. Primer of the History of Mathematics. Macmillan. $0.65. A compendium of the preceding work. If a school does not possess the larger work it should have this one.

Cajori. History of Mathematics. Macmillan. $3.50. A work somewhat after the style of Ball, with some material not given by the latter.

Cajori. History of Elementary Mathematics. Macmillan, $1.50. Also somewhat after the style of Ball. It should be in all high school libraries.

Conant. Number Concept. Macmillan. $2.00. An interesting work on the early methods of counting, particularly as seen among savage people of today.

Fink. History of Mathematics. Open Court Pub. Co. $1.50. A compendium of Cantor's great German history. It covers a wider field than Ball, but it is not written in so delightful a style.

Gow. History of Greek Mathematics. Clay (Cambridge Press). $3.00. A book that should be in every high school and municipal library, and owned by every teacher of geometry. It is a very scholarly summary of the history of Greek mathematics.

Heath. Diophantus of Alexandria. Second Edition. Clay (Cambridge Press). A study in the history of Greek algebra. The authoritative English work on Diophantus, giving a translation of his Arithmetica.

Jackson. Educational Significance of Sixteenth Century Arithmetic. Teachers College Bureau of Publications. $2.00. A good résumé of arithmetic in the formative period of the printed text-book.

Miller. Historical Introduction to Mathematical Literature. Macmillan. In press.

Smith, D. E. Rara Arithmetica. Ginn. $4.50. A bibliography of printed arithmetics up to 1601, with a description of the most important of the early works, and with many illustrations.

Smith, D. E. History of Modern Mathematics. Wiley. $1.00. A brief sketch of the most important chapters of modern mathematics, with a bibliography.

Smith and Karpinski. The Hindu-Arabic Numerals. Ginn. $1.25. This is the first attempt that has been made to bring together the various theories and the evidence as to the origin of our numerals. It contains many facsimiles from ancient inscriptions and manuscripts.

Smith and Mikami. History of Japanese Mathematics. Open Court Pub. Co. $3. This is the first attempt to bring before American and European readers any extended history of Japanese mathematics. It covers the entire period from ancient to modern times. It is profusely illustrated.

Books on Mathematical Recreations

Abbott. Flatland. Little, Brown. $0.60. A charmingly written popular treatment of the fourth dimension.

Andrews. Magic Squares and Cubes. Open Court Pub. Co. $1.50. The only satisfactory treatment of this interesting subject in English.

Ball. Mathematical Recreations. Macmillan. $2.25. The best general work on this subject that we have in English.

Heath. Heath's Mathematical Monographs. I-IV, Rupert's Famous Geometrical Theorems. Each 10c. V, Milner's on Teaching Geometry. 10c. VIII, Bruce's The Triangle and Its Circles. 10c.

Hill. Geometry and Faith. Lee & Shepard. $1.25. An excellent little work to have on the shelf for students to read.

Jones. Mathematical Wrinkles. Jones, Gunther, Texas. $1.65.

Kempe. How to Draw a Straight Line. Macmillan. $0.75. We can draw a circle without another circle with which to trace it, but we draw a straight line by tracing another one. This work shows how we may have an instrument for drawing a straight line, just as we have one (the compasses) for drawing a circle.

Schofield. Another World. Swan, Sonnenschein, London. $0.75. Another popular treatment of the fourth dimension.

Schubert. Mathematical Recreations. Open Court Pub. Co. $0.75. More scholarly than most popular works of the kind in English. The treatment of the fourth dimension is more serious than usual in such cases.

White. Scrap-Book of Elementary Mathematics. Open Court Pub. Co. $1.00. A collection of short papers on interesting mathematical topics and recreations.

Mathematical Journals for Teachers

The American Mathematical Monthly. Drury College, Springfield, Mo. $2.00 per year. Besides articles of special interest to college teachers it contains a department devoted to problem solving.

The Mathematical Gazette. G. Bell & Sons, London. $2.75.

The Mathematics Teacher. 41 North Queen Street, Lancaster, Pa. Quarterly. $1.00 per year. This journal is published under the direction of the Association of Teachers of Mathematics for the Middle States and Maryland. It contains numerous articles on the teaching of secondary mathematics.

School Science and Mathematics. Smith and Turton. 2059 East 72nd Place, Chicago. Monthly. $2.00 per year. Each month about half of the articles in this publication are devoted to questions relating to the teaching of high-school mathematics. The journal also reviews new text-books and contains a problem department. A valuable and suggestive periodical for the teacher who wishes to keep in touch with current progress in mathematical teaching.

Portraits of Mathematicians

Smith, D. E. Portfolios of Portraits of Eminent Mathematicians. 2 parts. Open Court Pub. Co. $3.00 each part, and a special part for high schools at $2.00. The sets include portraits of Pythagoras, Euclid, Archimedes, Descartes, Newton, Napier, Pascal, and others. They are of a size that allows for framing, and are suitable for the decoration of a class-room.

A Short List of Mathematical Books for a High School Library

Total Cost About $10.00

Carson. Mathematical Education. Ginn. $0.75.
Smith. The Teaching of Geometry. Ginn. $1.00.
Young. The Teaching of Mathematics. Longmans. $1.50.
Fine. College Algebra. Ginn. $1.25.
Young, J. W. Fundamental Concepts of Algebra and Geometry. Macmillan. $1.60.
Klein. Famous Problems of Elementary Geometry. Ginn. $0.50.
Cajori. The History of Elementary Mathematics. Macmillan. $1.50.
Ball. Mathematical Recreations. Macmillan. $2.25.

A List of Mathematical Books for High School Libraries that Can Be Bought for About $25

This list includes all of the titles in the ten-dollar list.

Smith. Teaching of Elementary Mathematics. Macmillan. $1.
Schultze. Teaching of Mathematics in Secondary Schools. Macmillan. $1.25.
Hilbert. Foundations of Geometry. Open Court. $1.
Dupuis. Elementary Synthetic Geometry. Macmillan. $1.25.
Jourdain. The Nature of Mathematics. Dodge Pub. Co. $0.25.
Whitehead. An Introduction to Mathematics. Holt. $0.75.
Young, J. W. A. Monographs on Modern Mathematics. Longmans. $3.00.
Auerbach. Graphical Mathematics. Allyn and Bacon. $0.35.
Breckenridge, Mersereau, and Moore. Shop Problems in Mathematics. Ginn. $1.
Ball. History of Mathematics. Macmillan. $3.25.
Manning. The Fourth Dimension Simply Explained. Munn. $1.50.
White. Scrap Book of Elementary Mathematics. Open Court. $1.

Mr. Allen moved that the report of the library committee be accepted and adopted and that the conference declare that this is the best ten dollar list and the best twenty-five dollar list of books which it is now ready to recommend. The motion was seconded.

Dr. Lytle suggested that Young's *Fundamental Concepts of Algebra and Geometry* be inserted instead of Dupuis's *Elementary Synthetic Geometry* and accordingly the original motion was amended and the amendment was seconded to this effect.

Professor Shaw said that he has taught the book written by Dupuis and that it has new and good ideas and is a good book for teachers to read but it is not the best book to teach. Young's book should be in the teacher's private library.

The amendment was carried and the original motion as amended was passed.

Graphs in Elementary Algebra: Their Purpose and Methods of Teaching Them

H. C. Zeis, McKinley High School, St. Louis, Missouri

I shall argue in favor of emphasis upon graphic work in elementary algebra for four main reasons, namely.

1. The graph is a means of expression.
2. The graph vitalizes the equation.
3. Graph provides an introduction to the notion of functionality.
4. Graph is useful in further study of mathematics.

Books and current literature abound in graphic representations of facts and figures. Trains of different lengths are used to represent the relative number of miles of railroads of different countries and cubes of different sizes represent their relative output of coal. An examination of the magazines in the reading room of the University library at one time revealed such graphic representations as "Relative amounts of artificial light used throughout the year," in Popular Mechanics. In Pure Products there appeared a graph showing the number of microbes in a given volume of air for different samples from the country, city, office, school and factory. An examination of bulletins issued by the Agricultural Experiment Stations showed the use of the graph to represent the amounts of milk produced by alfalfa-fed cows for a given period of time; same for cows fed on timothy and for some fed on bran. In another bulletin the temperature of a hog at hour intervals after serum treatment for cholera was graphically represented. Weather maps and records of variations in temperature, rainfall, wind velocities, humidity, degrees of cloudiness, are usually recorded in graphical form.

Practically every branch of science employs graphic methods. An interview with a representative of the Botany department added such illustrations as these; a curve showing relation between light and gas formation of plants, growth and temperature, growth and light. The bacteriologist finds in the graph a powerful means of representing and studying the results of his experiments, such as the growth of bacteria with time, or with the variation of temperature. The physicist, the chemist, the economist, all employ graphical methods. The physicist, for example, depicts graphically the relation between pressure and volume of a gas. The economist, the relations between price and demand or between price and supply of a commodity. Engineers and architects use the graph to represent comparative strength of materials under strain.

The history department of the university uses a booklet containing data to be graphically represented and directions for constructing graphs. Among those data I may cite immigration into the United States by years, population of the United States, amounts of continental money in circulation, output of cotton in the United States by years.

One may multiply illustrations of the graph almost without limit. Doctors frequently require nurses to draw fever-curves of patients. Fond fathers draw the weight curves of their babies. In answer to my question as to the

dividend of his company compared from year to year, an insurance agent sketched their fluctuations by means of a graph. In Germany some railroads have devised a graphical time table. Observations such as these tend to show that Prof. Klein, the acknowledged leader of the reform movements in mathematics teaching in the German Empire, did not exaggerate when he made the statement "We cannot open a newspaper or book any more out of which a graph does not stare us in the face."

In the light of such facts it would seem evident that of the topics of algebra that find most frequent application outside the classroom itself the graph ranks among the first, if not the foremost of all.

A second reason for emphasizing the graph is that it vitalizes the equation. Graphically represented, equations will mean more than a combination of symbols; they will be interpreted in terms of their concrete representations. The number and nature of solutions, the reason why simultaneous linear equations have only one solution, the significance of equal, and of imaginary solutions of simultaneous quadratics, all are made meaningful by graphical representation. The graph relieves the solution of equations of the abstractness which usually attends a manipulation of symbols.

A third argument in favor of teaching the graph lies therein that it provides an introduction to the notion of functionality. The graph is the most effective way of representing the functions that are most familiar to the pupil. Its use, therefore, makes it possible to begin the study of functions with illustrations from within his immediate experiences represented in the most vivid and concise manner. The correspondence between two sets of numbers, which constitutes the underlying idea of functions, is ever emphasized in computing and arranging data and constructing the graph. The pupil always deals with two interdependent sets of numbers.

Besides the uses of the graph already mentioned, another reason in favor of teaching it, although a lesser one, lies in its usefulness in the further study of mathematics. I need not mention here the importance of the graph in the mathematics beyond that of the high school. If the students are not familiar with the graph on entering college mathematics, they will, of necessity devote considerable time to its mastery at the expense of other matter in the college course.

Now, as to methods of teaching the graph. Realizing that various modes of procedure may be followed, I shall merely suggest some possible ones, giving reasons therefor.

The graph is most commonly introduced with a consideration of data of a statistical nature. Take, for example, the temperature for a period of twenty-four hours at hour intervals. The graph may be constructed by erecting perpendiculars to a line at equal distances from each other, and having lengths corresponding to the values of the respective temperatures. After drawing additional lines to represent the approximate temperatures at other times, say at the half-hour intervals, the tops of these lines may be joined by a smooth curve which shall approximately represent the continuous change of tempera-

ture. While discussing such a curve, the question may be asked, what change there would be in the appearance of the curve if a thunderstorm had come up, say at 2 P.M., followed by rain for an hour and then clear weather.

Data relating to local events may be plotted, such as the temperature readings of a certain day, as obtained from reports of a local newspaper, the attendance at the high school for a period of years, athletic games won, number of pupils graduated from high school, or the average grade of pupils over a period of years. Statistics and data from other branches of science may then be plotted. Statistics may be obtained from the United States Statistical Abstract or from the Daily News Almanac or World Almanac. Cumbersome figures should not be used for the sake of accuracy, but rather the round numbers, and large numbers drawn on a smaller scale.

After the pupil becomes familiar with the graph in general, its interpretation may be extended. The functional relation should be pointed out. Among the questions which should be answered from the graph are (1) when the function has a given value, (2) when it is greater than or less than a given value, (3) the ranges of values included in the period considered, (4) maxima and minima, (5) when it changes from increasing to decreasing and vice versa.

Following the above such data may be calculated and plotted: distance-time of a moving object (rate constant), cost-distance of a railroad ticket, wage-time, cost-amount of an article bought, Fahrenheit-Centrigrade thermometer readings of the same temperatures. In this class of exercises, a number of corresponding number pairs may be calculated in each case and the graph constructed. The similarity of the curves will be apparent. The exercises of this set serve as a transition from the statistical graph to the graph of a linear equation in two variables.

A more detailed explanation may now be given of the construction of a graph. Heretofore only positive numbers occurred in the data. In plotting other equations now, negative numbers will enter. Methods of representing points in a plane may be explained by comparison with the representation of the latitude and longitude of a point on the earth's surface or by comparing with the street system of the local town, if the system is of such a nature that it can be used for the comparison.

By plotting two linear equations with the same set of axes, the significance of the point of intersection may be deduced. Simultaneous quadratics may be treated in the same way. Quadratic curves are best taken in the following order: parabola, circle, ellipse, hyperbola. By plotting two curves which do not intersect, or are tangent, the meaning of imaginary and double solutions can be made clear.

Imaginary numbers, if taught in the third term of algebra, should also be graphically represented. Graphic representation will give these numbers a meaning, while otherwise they are generally considered as merely a product of the imagination.

The minimum of efficiency to be attained by the pupils in the study of graphs may be stated thus:

1 Ability to construct a statistical graph,

2 Ability to interpret a statistical graph,

3 Ability to construct a mathematical graph,

4 Ability to give a graphical interpretation of the number and kind of solutions of simultaneous equations.

The Function Notion in Elementary Algebra

By James F. Millis, Francis W. Parker School, Chicago

When I was asked to discuss at this conference the *function notion in elementary algebra,* it was suggested that the paper should indicate in more or less detail just how I would proceed to develop the function notion with beginning students. In my teaching I do follow a certain constructive plan in regard to this matter, which I shall attempt to explain.

There is another "function" notion in the teaching of elementary algebra in which teachers today are greatly interested besides the mathematical idea of function selected for discussion at this meeting; namely, the idea that mathematics in the secondary school should be made to function in the lives of the students by teaching it in relation to its practical applications, or its bearings on real life. In the plan of teaching which I follow, these two "function" notions are, in fact, intimately connected.

At the outset of the discussion it is necessary to define the term *function* as it is to be used. The following definition is believed sound and consistent with the idea of a function as used in higher mathematics.

A function is a number expression containing one or more general or literal numbers whose values are unassigned, or which are capable of assuming different values.

The *undeterminedness,* or *variability,* of the numbers involved is an essential element in the idea of a function. And the *dependence of the value* of the function upon the values of the literal numbers involved is another essential idea.

Thus, the expression $\frac{1}{2}h(a+b)$, which denotes the area of a trapezoid, with altitude h and bases a and b, respectively is a function of h, a, and b. Its exact value depends upon the values given to h, a, and b. And by assigning appropriate values to these literal numbers, the function $\frac{1}{2}h(a+b)$ may be made to express the areas of all trapezoids in existence, or to assume innumerable values.

It is believed that the function notion in elementary algebra is vital to a true understanding of algebraic symbolism and algebraic principles and processes by the student. The old-time textbook of algebra failed to develop this true understanding on the part of the student, because the function notion was not adequately presented. Ordinarily the text introduced the subject of algebra by stating in few words that, in addition to the symbols of arithmetic, algebra made use of letters of the alphabet to represent numbers, that the first

letters of the alphabet represented *known numbers* and the last letters of the alphabet represented *unknown numbers.* The text then proceeded, without elaboration of this matter, to introduce new mathematical symbols and to drill the student on the operations. The function idea was approached only in the brief chapter on variation near the end of the course. Since graphs have been introduced into elementary algebra, the function idea has been brought out somewhat in that connection. To my mind, *the function notion is not now made sufficiently fundamental in elementary algebra, and is not introduced early enough in the course. It should be made the very doorway through which the student enters the subject of algebra.*

The plan of introducing the function notion at the beginning of algebra involves consideration of another matter which is intimately connected with it.

The solution of equations has always been the main object in elementary algebra, although an immense amount of drill on formal processes, on factoring, fractions, etc., while incidental to the solution of equations, has dominated the work. Textbooks today stress the solution of equations and the application of equations in the solution of "concrete" or written problems. Long lists of written problems, to be solved by first expressing them by means of equations, then solving the equations, occupy a large proportion of the time of the student. *Have we duly considered whether this should be, after all, the chief object or only ultimate object of elementary algebra?* And should it alone usurp the time, to the exclusion of other matters? Those who have interested themselves in the attempt to teach algebra in connection with its practical uses, and who have investigated the character of the uses made of elementary algebra in real life outside of the school room, have found that the solution of practical problems by means of equations is not the only use of elementary algebra made by those engaged in practical work. The making of algebraic formulæ and computation by evaluating such formulæ is of extremely frequent occurrence in practical work. In fact, it is believed that in those practical lines of work entered upon by secondary-school graduates where algebra is used at all, the need for evalution of formulæ is more frequently encountered than the need for solving applied problems by means of equations. This is a significant fact. Yet what is done about it in school? In algebra as taught in the secondary school, the making and evaluation of formulæ has little or no place. Are we not neglecting here a phase of elementary algebra that, judged by the practical or educational needs of the student, is one of the most important parts of the subject? *Does not the consideration of educational values demand that less time be given in the high school to drilling on such matters as complicated division of polynomials and the solution of long lists of so-called applied or concrete problems by means of equations, and that more time be given to work with formulae?*

With this point of view, I have, for a number of years, given much attention to the making and evaluation of formulæ in teaching elementary algebra. *The student is introduced to algebra through this work with formulae. In this way the function notion in algebra is developed, as we shall see, at the beginning of the subject.*

This procedure is in harmony with the present-day movement to unify high school mathematics by correlating algebra with arithmetic, geometry, and science. It also uses in a pronounced way the fundamental pedagogical law of proceeding from the known to the unknown, of basing each new idea on a previous experience.

The work begins with a review of the rules of mensuration, with which the student has become familiar in arithmetic, namely, with the rules for computing the area of a rectangle, a triangle, a trapezoid, a circle, etc. First, problems are given requiring such computations. After these exercises, the general rules are formulated by the student. Then, by reducing the rules to a sort of shorthand, or to symbols, they are expressed by formulæ. The formulæ, in turn, are applied in further computations by their evaluation when particular values are assigned to the literal number symbols involved. Algebraic notation and symbolism are thus incidentally invented, and the student is in the midst of algebra before he knows it. Every opportunity is utilized of extending the notation when encountered in special problems, as the following will show.

First we give exercises of the following *types:*

1. How many square feet in a floor 12 ft. wide and 15 ft. long?

2. Measure the dimensions of this object *(providing the student with an object)* to sixteenths of an inch, and compute the area of its surface.

3. Write a rule for finding the area of any rectangle.

4. The rule for finding the area of a rectangle which is l units long and w units wide may be expressed by the formula:

$$Area = l \times w \text{ square units.}$$

Find the area when $l = c\frac{1}{2}$ ft. and $w = 2$ ft. When $l = 16$ ft. and $w = 2\frac{3}{4}$ ft. When $l = 50$ ft. and $w = 4\frac{1}{2}$ ft. When $l = 13.6$ ft. and $w = 9.4$ ft.

Then it is pointed out that in Exercise 4 the letter l is used to represent the length of any rectangle, and hence if all possible rectangles are considered, l may have many particular values. Similarly, if we consider all possible rectangles, w may have many particular values. It is clear, then, that in expressing a rule by a formula, letters are used to represent numbers, and to such letters may be assigned many particular values. Compared to the *particular* or *definite* numbers of arithmetic, 1, 2, 3, etc., numbers represented by letters are called *general* or *literal* numbers.

Also the numbers which are multiplied are defined as *factors* at this point, as l and w in $l \times w$. And it is pointed out that in addition to use of the sign $\times$ to indicate multiplication, as in the above problem, multiplication is expressed by placing a *dot* between the factors, as $l \cdot w$, but that, unless both factors are represented by Hindu symbols, the multiplication usually is expressed by omitting the multiplication sign entirely. Thus, $l \times w$ may be written $l.w$ or lw, *and* $2 \times w$, *may be written* $2w$.

In connection with this study of the rectangle, the true idea of a function is brought out. It is seen that in the formula $Area = lw$, not only are l and w unassigned or variable in value, but also the value of the *area* depends upon the special values given to l and w. For any fixed or assigned value of w, the area varies according to l; for any fixed value of l, the area varies according to w; and if both l and w change, the area is affected accordingly.

At this point the functionality of the area is also depicted graphically, not by means of axes and a curve, but as follows:

In the formula $Area = lw$, assign a fixed value to w, say 2 in. Then draw a series of rectangles with the common width 2 in. and different lengths. The dependence of the area upon the length is shown clearly to the eye.

Also, assign a fixed value to l, say 5 in., and draw a series of certangles with the common base of 5 in. and different altitudes. These show the dependence of the area upon the width.

Again, a third series of rectangles is drawn in which the length and width both are varied. This series depicts to the eye the dependence of the area upon the length and width jointly.

In the exercises, *practice* is given in expressing a rule by a formula and in interpreting a formula as a rule. Also the unassigned character or variability of the literal numbers is brought out, as well as the dependence of the value of an expression or function on the values of the literal numbers involved.

The last few of these exercises introduce a new idea in notation, namely, the idea of an *exponent*. At this point of the work it is pointed out that in the formula $A = \Pi\ r^2$, r^2 is a short way of writing rr. It is then shown that similarly rrr may be written, r^3, $aaaa$ written a^4, $10 = 10 \times 10 \times 10 \times 10$ written 10^5, etc. *Power, base,* and *exponent* are then defined. These new ideas are in turn applied in exercises.

The formula for the area of a trapezoid requires the use of *parentheses*. Parentheses are here defined, and their use explained. In this connection, the other *signs of grouping* are introduced as substitutes for parentheses. Practice is then given in evaluating expressions or functions which contain signs of grouping, the expressions being limited to monomial forms, such as $\frac{1}{2}h(a + b)$, $(m - n)$ $(m \times n)$, $(x - y)^2$, etc.

Following this drill, definitions are given of *terms, monomial, binomial, trinominal,* and *polynominal,* and the *evolution* of polynominals is undertaken.

Having thus developed the idea of literal or general number, certain knowledge of algebraic notation, and the evaluation of algebraic expressions or functions for special values of their literal numbers, by means of formulæ of mensuration, we then apply the knowledge gained to computation by aid

of formulæ which are encountered in miscellaneous fields of practical work. The following exercises illustrate the character of such formulæ:

Give a general rule for computing interest.

Express this rule by a formula.

The formula $C = E/R$ is used in electrical work. Find C when $E = 20.5$ and $R = 16.75$.

Following this, more exercises are given, applying the ideas which have been discovered, and finally leading to a new bit of notation.

It is believed that by *such an approach to algebra as here outlined* the student gets an accurate grasp of the function notion at the beginning of the subject. He sees that in an algebraic expression the values of the numbers represented by letters are undetermined or general, and that they may vary through a wide range. And he sees that the value of an entire expression or function depends upon the values assumed by the several literal numbers which it contains. These, as stated before, are the essential ideas in a function. Also the graphic representation of functionality which is introduced in connection with the formulæ of mensuration affords a foundation for other graphic methods later on.

At the same time, the student has mastered sufficient algebraic notation in connection with the study of formulæ for qualifying him to take up the simple equation, and, following it, the formal processes with algebraic expressions. And also he has mastered a phase of algebra which we believe has been almost if not quite neglected in secondary school work; namely, the solution of a certain type of problems which are encountered in the world's work, by the formulation and evaluation of formulæ.

The function notion is again utilized in connection with the fundamental operations with polynominals, for checking work by the substitution of special values of the literal numbers. This process is given in many of the newer texts on elementary algebra, and hence need not be illustrated here.

Here again, the variability of the number symbols involved, and the dependence of the value of an expression upon the values represented by the number symbols, is fundamental.

The function notion is essential to a correct understanding of equalities of algebraic expressions—of identities and of conditional equations. For example, the unconditional variability of the literal numbers in an identity is brought out by substituting many sets of values of the literal numbers in both members, and seeing that the resulting values of the two members are equal in all cases. Thus, the members of $(a + b)^2 = a^2 + 2ab + b^2$ are equal for any values of a and b that may be assigned. In a conditional equation, however, the *equality* depends upon the values assigned to the unknown or literal numbers, and does not hold true for all values that may be assigned. The solutions of equations are checked by evaluating the functions comprising the members, to see if they are equal when the unknown numbers are assigned the special values obtained in the solutions.

In connection with the teaching of proportion, certain special forms of variation which are related to proportion are taught, as is usually the plan in textbooks. The first is so-called *direct variation.* Thus, x is said to vary directly as y if $\frac{x}{y} = k$, where k is constant. It follows that two pairs of corresponding values of x and y are in proportion. For, from $\frac{x^1}{y^1} = k$ and $\frac{x^2}{y^2} = k$ we get $\frac{x^1}{y^1} = \frac{x^2}{y^2}$. From $x = ky$ it is clear that x is a function of y, its particular value depending upon that of y.

Similarly, x is said to *vary* inversely as y if $xy = k$, or $x = \frac{k}{y}$, where k is constant. Hence x is a function of y. The value of x decreases as that of y increases. Again, x is said to *vary jointly* as y and z if $x = kyz$, where k is constant. Here x is a function of both y and z.

Following these special forms of variation, I show in teaching that in general one quantity may vary as any algebraic expression or function of one or more other quantities. Thus, $y = 2x^2 - 5x + 3$ expresses a form of variation, the values of y depending upon the special values assumed by x. And $s = \frac{1}{2} at^2$, which expresses the law of falling bodies, shows that the distance s which an object falls from rest is a function of the time, the distance varying directly as the square of the time.

Functionality as related to graphic methods is resumed in connection with the treatment of vibration, at this point. It is made fundamental to all of the applications of graphic methods to equations which follow. It will only be attempted here to outline the steps in the treatment of graphs, to indicate how the use of graphic methods in equations is based upon the function notion.

The first step is the introduction of graphs for depicting to the eye the variation of quantities such as temperature, population, exports, etc. They emphasize functionality.

For example, the public debt of the United States, in millions of dollars from 1820 to 1900 is given in the table:

Year	1820	1830	1840	1850	1860	1866	1870	1880	1890	1900
Debt	91	49	4	63	65	2773	2840	2120	1552	2136

On squared paper a graph of the public debt is plotted, time being measured along the horizontal axis and debt along the vertical axis.

This graph shows to the eye the relation between the variable debt and time. The debt varies with the time, and depends upon the time; that is, the debt is a function of the time.

Next, "price curves," etc., are constructed and used for determining costs of goods, interest on money, etc., without computation.

This step leads next to the construction of graphs of linear functions containing one general number. The functionality is given by an equation.

By assigning special values to the general number in the second member, a table of corresponding values of the function, or first member, is computed. From this table, a graph is constructed as in the case of price curves, etc. It is seen that the graph of any linear function of this sort is a straight line.

We are now ready to construct, as the next step, the *graph of any linear equation* in two unknown numbers. There is nothing new in this step, except that the equation must first be solved so that one unknown number is expressed as a function of the other. For example, for constructing the graph of $2x + 3y = 12$, we first solve for y, and obtain $y = \frac{12 - 2x}{3}$. The remainder of the work is the same as that of constructing the graph of a function.

The work in graphs outlined up to this point is developed consecutively, beginning with the study of variation, and is based upon the function notion. The graphing of linear equations is soon afterwards applied in the graphic solution of systems of linear equations in two unknown numbers.

Thus, for solving graphically the system $x + 2y = 4$, $2x - y = 28$, the graphs of both equations are drawn upon the same set of axes. The coordinates of the point of intersection of the graphs are the solution of the system. The solution of this system is seen to be $x = 12$, $y = -4$.

At this point it is shown graphically that in general a system of two linear equations in two unknown numbers has only one solution; also that in general three or more linear equations in the same two unknown numbers cannot have a common solution. An inconsistent system is shown to be represented by two parallel lines.

Quadratic and higher equations are treated graphically by the same methods as linear equations. Thus it is found that the graph of such an equation as $x^2 + y^2 = 100$ is a *circle*. Similarly, the graph of $4x^2 + 9y^2 = 576$ is an *ellipse*, that of $y^2 = 3x + 9$ is a *parabola*, that of $x^2 - 2y^2 = 16$ is an *hyperbola*. Systems involving quadratic and higher equations are solved graphically by obtaining the coordinates of the points of intersection of the graphs of the equations.

Graphic methods are used to interpret the roots of a quadratic equation in one unknown number. For example, for solving graphically $x^2 - 11x + 24 = 0$, let $y = x^2 - 11x + 24$. The graph of this equation is found to be a parabola which crosses the x-axis at two points whose x-distances are 3 and 8, respectively. Hence the roots of the given equation are 3 and 8. This is seen to be equivalent to solving the system $y = x^2 - 11x + 24$, $y = 0$.

An equation in x with equal roots is seen to be represented graphically by a curve which is tangent to the x-axis. And an equation with imaginary roots is seen to be represented by a curve which does not cross nor touch the axis.

Graphic methods are used also for showing the introduction of extraneous roots in the solution of irrational equations. For example, let us solve $\sqrt{x+1} - \sqrt{8x+5} = 0$.

Solving, $x = 8$ or $1^{23}/_{49}$.

By substitution it is seen that 8 satisfies (1), but $1^{23}/_{49}$ does not. The extraneous root was introduced by squaring. What took place in the solution is shown graphically by a figure.

Finally, graphic methods are used in the high school course for interpreting the solution of a defective system involving quadratic or higher equations. For example, the system $x^3 - y^3 = 208$, (1) $x - y = 4$, (2) is solved by dividing (1) by (2), which gives $x^2 + xy + y^2 = 52$, (3) then solving the new system composed of equations (2) and (3).

To summarize, I have attempted to outline a plan of teaching in which the function notion is developed in a natural and rational way at the very beginning of elementary algebra, and has a fundamental part in the work, particularly at the following points of the course:

1. The making and evaluation of formulæ (at the beginning of the subject).
2. Checking the operations of algebra.
3. The study of equalities — identities and conditional equations.
4. The formal topic of variation.
5. All graphic work, including:
    (1) Variation of quantities presented graphically.
    (2) Price curves, etc.
    (3) Graphs of linear functions of one general number.
    (4) Graphs of linear equations in two unknown numbers.
    (5) Graphic solution of systems of linear equations.
    (6) Similar treatment of quadratic and higher equations.
    (7) Graphic interpretation of roots of equations in one unknown.
    (8) Study of extraneous roots of irrational equations.
    (9) Graphic interpretation of solutions of defective systems.

Discussion

Professor Rietz said that the name function should not be introduced too early in the course on account of other meanings of the word. The word must express the idea of variation of y with respect to x. How would such a word as "correspondence" do? Correspondence is simpler than variability and the two words and meanings could be associated.

Professor Shaw remarked that there is the graph and the graphical method. Anything in the tangible form appeals to the student. The graphical method can be applied earlier than the graph. The graph is more subtle and difficult. It is a curve, not the function, in which the ordinate represents the function with respect to the abscissa.

In the definition of a function it is not necessary that the expression depend for its value on an independent value at all. For example, $A = wl$ is an equation which can be introduced through arith-

metic and the function of the area of a rectangle is introduced in this way. Also the idea that w is a function of A and l could be introduced here.

Dr. Lytle said that he taught review algebra and could not succeed with the graphical methods. The students did not follow. The chief argument against the graph is lack of time to get results. According to David Eugene Smith the graph idea has been greatly overdone.

This report is respectfully submitted.

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Modern Language Section

From nine o'clock to ten, the German, French, and Spanish groups held separate sessions to discuss as their needs demanded.

In the German group two Reports, 1. Report of Committee on Course of Study, 2. Report of Committee on Minimum Library Equipment, which had been carefully worked out, by Augusta Krieger, Highland Park, Illinois; A. M. Korb, Peoria; Mabel Ricketts, Urbana; Eunice Prustman, Mattoon; Flora Ross, Decatur; H. C. Milbradt, Normal; R. P. Zimmermann, Champaign, and approved by O. L. Langhanke, Quincy, and Blenda Olsen, Macomb, were accepted. Because of the shortness of time, however, they were referred back to the committee with the resolution that the many suggestions from the floor should be included, and the reports be mailed to each teacher present a month before the 1916 meeting, that each might come intelligently informed to discuss the same.

In the French group, Professor John D. Fitz-Gerald, of the University of Illinois, presented a report on a French Library for High Schools, which the group adopted and voted to publish. The list is as follows:

Minimum High School Library for Teachers of French.

One	Spier's & Surenne's French & English Dictionary, (Appleton)..$	4.00
	Gasc: Library French and English Dictionary (Holt)..........	4.00
One	Larousse (Dictionnaire) pour tous, 2 vols., demi-chagim........	9.00
	or	
	Dictionnaire Général a la langue francaise (Damesletter, Hatzfeld, Thomes) 2 vols. Delagrave..........................	6.00

One	Petit Larousse Illustré	2.00
	or	
	Littré: Dictionnaire Abégé de la langue francaise.............	2.00
One	Lanson: Histoire de la littérature française..................	2.00
	or	
	Abry-Audic-Crouzet: Histoire Illustrée de la littérature française	2.00
	Brunetière: Histoire de la littérature française classique. 3 vols.	5.00
One	Wright: French Literature	2.00
	or	
	Saintsbury: French Literature	2.00
	Hassell: The French People (Great Peoples Series)...........	1.50
	Fortier: Histoire de France..................................	1.00
	Ramband: Histoire de la Civilization Francaise. 2 vols........	1.50
	Total cost, approximately...............................$28.00	$ 31.00

Minimum High School Library for Students of French

	Edgren & Burnet: French and English Dictionary (Holt)..$	1.50
One	Dowden: History of French Literature (Literature of the World) Appleton	1.50
	or	
	Kastner & Atkins: Short History of French Literature (Holt)	1.50
One	Doumic: Histoire de la littérature française................	1.00
	or	
	Pelissier: Précis de l'histoire de la litterature française.....	1.00
	or	
	Gazier: Petite histoire de la littérature française..........	1.00
	Livres roses pour la jeunesse (Larousse) each set contains 24 small volumes. Per set..........................	3.90 frs.
	Chansons de France pour les pebits français...............	2.00
	Petit Recueil de chants français à l'usage de l'ecole et de la famille. Cy H. Carter Oxford Press large edition.....	1.50
	La France: Géographie illustrée 2 vols. (Larousse) Demi-chagrim	68.00 frs.
	Set 100 stereoscopic views of France, Underwood & Underwood	18.30
	U. Y. C. Stereoscope.......................................	1.30
	Black's Color Books on France, Brittainy, Normandy, Paris, 3 volumes	5.00
	French Table Game (Jenkins).............................	.75
	Total cost, approximately..................................$	50.00

In the Spanish group a report on a Course of Study in Spanish was submitted by Professor A. R. Seymour, of the University of Illinois, and accepted. "In outlining this Course of Study it has seemed best to make the work of the Business Course and of the College Preparatory Course identical for the first two years. Both the Business Course published in the Proceedings of last year and this more strictly College Preparatory Course prepare for college. It will be seen that in the choice of reading matter, attention is given to the short stories, the novel, and the drama in College Preparatory Course rather than to newspapers, magazines, trade reports, etc. of the strictly Business Course."

Professor John D. Fitz-Gerald of the University of Illinois presented the following report on Minimum Library Equipment for Spanish, which was accepted:

Minimum High School Library for the Teacher

The New Velazquez (Appleton) Spanish and English Dictionary	$ 6.00
Diccionaire de la leugue castellana R.A.E. de la L.	6.00
Hume: Spanish People	1.50
Burke: History of Spain to Ferdinand and Isabelle, 2 volumes	4.00
Hume: Spain: Its Greatness and Decay	2.00
Hume: Modern Spain	1.50
Altamira: History de Esp. y de la Civ. Esp., 4 volumes	5.00
Ticknor: Spanish Literature, 3 vols.	8.00
Blanco Garcia: Spanish Literature in 19th Century, 3 vols.	3.00
Black's Color Books on Spain, 2 vols.	5.00
(This total is only approximate.)	$42.00

Minimum High School Library for the Pupil

Cuyás: Spanish-English and English-Spanish Dictionary (Appleton)	$ 2.50
Pegueño Larousse Ilustrato	2.00
Fitzmaurice-Kelly: Spanish Literature (Appleton)	1.50
H. Bubler Clarke: Spanish Literature	1.50
Katherine Lee Bates: Highways and Byways in Spain	2.00
Fitz-Gerald: Rambles in Spain	3.00
Spanish Children's Songs	2.00
Katherine Lee Bates: In Sunny Spain	1.50
Set of 100 Stereoscopic Views of Spain, Underwood & Underwood	18.30
Stereoscope	1.30
Don Quijote (Illustrated by Van Dyke). Matteaux's Translation 4 vols. de luxe	3.80
Clarkson: Catalogue	
(The total is only approximate.)	$39.40

At ten o'clock the German, French and Spanish groups met in combined session as the Modern Language Section. With regard to the selection of texts for the various courses of study discussion arose about the tendency of some book companies to get school boards to adopt texts regardless of the disapproval of the teacher concerned. To combat this practice the following motion was carried, that it is the sentiment of this section that no board should adopt any book in Modern Language without the advice and consent of the teacher concerned.

Next followed the report on the questionnaire on Supervised Language Study.

(1) Copy of the

Questionnaire

1. Into how many periods is your school-day divided? ....

2. What is the length of the period? ....

3. What do you consider the proper length of a period? ....

4. How many periods per day do you teach? ....

5. In each high-school pupil's day there are certain periods that he spends in study, the teacher's function during such periods being reduced to the mere keeping of order. How many such periods have you each day?....

6. The typical high-school pupil carries four subjects daily and his school-day contains six periods. The two remaining periods each day he spends in unsupervised study of two of the four lessons that must be recited daily. The other two lessons must be prepared at home, also without supervision. To reduce the number of unsupervised preparations made by the pupil, it is proposed to turn all his present study-periods into supervised study periods, distributed proportionally on all the subjects. For example, one week subjects A and B would get two supervised study periods and subjects C and D would get three; and the following week the proportions would be reversed: A and B =3, and C and D = 2. The number of recitations would remain as at present.

   Would you be willing to use for such supervised study classes the periods (see Question 5) that you now have free from teaching? ....

7. Do you approve of limiting all language classes to a registration of not more than 20? ....

   Name ....
   Position ....
   School ....
   Place ....

(2) Report of the Committee:

The Committee of the Modern Language Section of the High School Conference conceived the idea of sending out a questionnaire on supervised study as a result of certain discussions that took place in various of the group meetings of the Modern Language Section during the Conference of 1914.

Several of the teachers of high school classes stated that their pupils fell into deplorable habits of study through lack of proper guidance and often came to class with a lesson diligently studied but erroneously understood. Before a correct understanding of the lesson could then be reached, the teacher was obliged to spend a deal of time in eradicating the error that had been so carefully acquired. In other cases the lack of proper guidance had led to discouragement on the part of the pupil and a consequent general neglect of study.

Of course, this brought up the whole question of what is teaching: leading the child out into wider fields of knowledge, or merely correcting the errors he has made in acquiring knowledge for himself. The former idea of teaching leads inevitably to supervised study, the latter to our present recitation method.

Attention was called to the fact that German, Austrian, French, Belgian, Dutch and British secondary schools seldom (if indeed ever) fall into the recitation practice that is so prevalent with us, and the question was asked, whether we might not find right at this point one of the explanations of the fact that we get less good and permanent results with our pupils than in generally the case with pupils of similar age who have followed the methods employed in the countries mentioned.

The Committee was so impressed with this discussion that when it met to formulate plans for the year 1914-1915 and a programme for 1915's conference, it was decided to make supervised study one of the principal topics of the programme. In the hope that the Conference session might make some real contribution to the subject, the Committee formulated the questionnaire with which you are familiar.

The questionnaire was framed with considerable care by the entire committee working over it together; then, before it was sent out, it was submitted for correction to the expert criticism of Professor Hollister. We do not pretend that it is a perfect document, nor that it exhausts the subject; but it does cover the points we wished to raise in the space we wished to use. In the most important question asked we were intentionally less specific than we might have been, and we did not define what we had in mind when we used the phrase "Supervised Study," which (like so many other catchy and much used phrases) has begotten a marvelous and multitudinous progeny of definitions. And our reason for leaving the phrase undefined was precisely that we wished to see how the phrase was being used and understood throughout the state.

The Committee is willing to say, now, however, that in using the phrase "supervised study", we did not mean the presence of a teacher in a room con-

taining 200 pupils studying practically every subject offered in the high school curriculum, and the occasional aid and supervision that such teacher could give in the preparation of lessons on such disparate subjects. Some of the answers showed that such is the interpretation of many teachers. Other answers showed that the writers thereof feared that such was the committee's interpretation and the writer quite correctly protested thereat. What the committee did mean can be judged by the following sentences taken from a letter recently written to me by Dean James E. Russell, the author of the well-known book on *German Higher Schools:*

"The fact is that the German method of instruction is wholly different from our method of recitation. With them no new book is undertaken out of school. All steps in advance are taken in class under the lead of the teacher. The purpose is to promote accuracy, avoid guessing, and develop dependence upon authority. * * * The advanced steps being taken in class, the home work assigned is always by way of review, in confirmation of what has been done in school."

Or, to put it more categorically: each teacher during a period of "supervised study" on any given day will teach to his or her own pupils the exact lesson they will have to recite during a given period of the following day.

The questionnaire was inflicted upon some 500 principals and language teachers including teachers of Latin as well as teachers of modern languages. The committee expresses its hearty thanks to the 315 principals and teachers from whom answers were received.

With the problem of supervised study before us, the committee has in mind two types of school whose methods it can hardly approve as likely to obtain the best results.

First, there is the school with a six-period day, which seems to be a very numerous type in certain parts of the country, if not indeed the dominant type. In this school the average pupil recites four lessons per day, and spends the other two periods of the school day seated in a large assembly-room presided over by a teacher. During these two periods the child is expected to prepare two of his next day's lessons, and to do it entirely by his own efforts. The kind of supervision given in such schools and at such periods does not mean real supervised study. In the first place the pupils in such assembly rooms are almost always too numerous to make teaching possible; in the second place they are usually too heterogeneous; and in the third place, in the vast majority of cases, when even the occasional help is sought the teacher who happens to be in charge of the room will not be a specialist in the subject specifically needed: the Latin teacher will receive questions concerning physics, mathematics, or botany; and the teacher of one of these subjects will be asked questions concerning Latin, Greek, French or German. The other two lessons each day the pupils in this type of school must prepare at home, without any kind of expert advice or supervision.

The second type of high school mentioned a moment ago is the so-called two-session school, where the pupils are in attendance only during the periods in which they recite, usually four. Of course, the pupils in such schools must

do all their preparation out of school and there is not even a pretense or a semblance of supervised study.

The Committee realizes that in the schools of both these types there is much excellent teaching, and that splendid results are often obtained. But we realize also that the teaching is in the one case wholly, and the other almost wholly, *post factum;* that it occurs only *after* the pupil has struggled with the new material, and that under such circumstances even a good pupil may get started on a blind trail through the misunderstanding of some little detail.

With full consciousness that there are many problems to be met before we can reach the goal we have in mind, the committee wished to feel the pulse, so to speak, of the great body of high school language teachers throughout the state, and to learn how many of them, without increasing their school day, were willing to spend all their time during the school day in direct contact with their own classes, using for supervised study, as herein briefly outlined, the periods not now used for recitation. The responses have been very encouraging. Two hundred and nine (209) of the principals and teachers expressed a willingness to do the supervising as proposed. Sixty (60) are unwilling. The remaining forty-six wrote their answers in such form that the committee did not feel warranted in placing them in either column, although it is perfectly evident that some belong in the affirmative and others in the negative.

The vote on question No. 7, limiting classes to a registration of twenty (20), was still more decisive: Yes—249; No—49; Silent—17.

The 242 answers to question No. 5 show 369 assembly or study periods.

The 293 answers to question No. 4 show 1310 recitation periods.

On question No. 3, concerning the proper length of a period, the vote ran:

77 in favor of 40 minutes
96 in favor of 45 minutes
25 in favor of 50 minutes
46 favored a variable figure between 40 and 50; i. e. 40-45; 45-50; 40-50.
Total not below 40 nor above 50—244.
Remaining 71 were scattered.
Very few suggested double periods: 2 of 30, or 2 of 40.

Question No. 2 concerned the length of the period now used, and the enswers showed

40 minutes;	45 minutes;	50 minutes
160	107	5

Total 272 lie between 40 and 50.

The remaining 43 were scattering.

On question No. 1, concerning the number of periods in the school day, we found our greatest variety; there being from 6 to 11. There were 42 questionnaires returned with either no answer to this question, or a sliding scale (6-7, 7-8), or the infrequent numbers 10 and 11 for the periods in the day. The remaining 273 tabulate as follows:

6 periods	7 periods	8 periods
14	119	140

Although in some parts of the country 6 is the favorite number of periods per day, the returns from our questionnaire would seem to indicate a preference in this state for 8 periods. And by the same evidence the committee is led to believe that 40 minutes is the present most usual length for a period. The committee does not know whether or not there are many schools that actually have a schedule of 8 forty-minute periods.

This would make a school day of 320 minutes without counting the opening exercises or the recess. In other words, a 6-hour day. It is presumed that with the 40-minute period each class would receive 35 minutes in the clear.

Eight periods of this length per day would meet the pupil's need if we were to adopt in its entirety the system of supervised study. The average student carries four (4) subjects in each of his four years, and it is understood that each of these subjects will occupy approximately one-fourth of his time and energy in any given year. This is in accord with the definition of a unit of admission requirements, as formulated by the *National Conference Committee on Standards of Colleges and Secondary Schools* and approved by the College Extension Examination Board: "A unit represents a year's study in any subject in a secondary school, constituting approximately a quarter of a full year's work. A four-year secondary school curriculum should be regarded as representing not more than sixteen units of work." His recitations thus occupying half his time in school, the other four (4) periods would be devoted to the study of the advanced lesson under the direct supervision of the teacher who will hear the recitation of that lesson the next day. Some principals and teachers prefer to give to a given subject the two periods in sequence, others prefer to separate them. This is a minor detail, although there is one important aspect of the situation that should not be lost from sight: If the study period is not in immediate sequence after the recitation period, or vice-versa, the pupil is forced to get the relief from monotony that comes from the break in the session and the necessity of changing to another room and teacher for the next subject and period. The same change does no particular harm to the teacher.

Some of the answers received state that this is precisely what is being done in some of the schools. The pupil under this system will get the full 8 periods in school and in contact with his teachers. But his home work will be materially lightened. In fact, he probably will spend in all no more time on his work than he now does; and the advantage will be gained by his being under more and better guidance than hitherto.

But while the pupil will spend the full 8 periods in direct contact with his master, it is not so certain that the teachers will necessarily have an added burden. Some teachers report that they are now teaching *6 hours*. If that be correct they would actually have a shorter teaching day if they met pupils throughout the entire 8 periods. But some principals write that they have already adopted full supervised study for some subjects and are planning to do so for the others. These same principals, some of these, write that when they adopted the plan, they gave each teacher only three (3) classes daily and assigned them double time: one period for recitation and one for super-

vised study, wherein the teacher goes carefully over the entire next lesson. The other two periods of the eight-period day can be used for correction of papers, etc.

Of course this system will require an increase in the staff of teachers; but not so large an increase as is usually claimed. And whatever it is, we must come to it, if we are to relieve ourselves of some of the criticisms now properly lodged against our work. Furthermore, despite the difficulty involved in trying to induce recalcitrant Boards of Education to grant the necessary funds for making the aforesaid increase in the staff, the principals who have earnestly tried the system consider that it is well worth working for.

This system is not entirely devoid of value even from the standpoint of its effect upon the teacher. It requires the teacher to have a better, readier, and more conscious control of his subject, and thereby makes of him or her a better teacher. At any rate, such is the judgment of those who touched this phase of the matter in their answers to the committee's questions.

The above report was followed by a paper on Supervised Study by Superintendent J. Stanley Brown, of Joliet Township High School. Mr. Brown's paper was as follows:

Supervised Study is a method of bringing into twentieth century co-operation, the time, the place, the teacher, and the pupil. All of these things are necessarily brought into a new and different, a better and more helpful relationship than before Supervised Study came to be recognized as a new method of approach. In Joliet we have applied this method of Supervised Study to Algebra, Arithmetic, English, Latin, German, French, Spanish, Geometry, all kinds of Sciences, and to some extent to Sewing, Manual Training, Cooking, and the like. We have about seventy people on our faculty, and of that entire number I am persuaded that none would willingly choose to go back to the previous single-period recitation and have that accompanied with the kind of preparation which the average adolescent boy or girl would be inclined to give.

The use of the Supervised Study method involves two succeeding periods of the day, the first of which is used for the ordinary recitation, the second is used to so direct the work of the pupil for the following day that he will get the most out of the time at his disposal and to correct any wrong impression or any mis-information which may develop during the first period. No two subjects use the double period and the Supervised Study method in the same way because no two subjects are taught in just the same way.

In the case of Modern Language teaching, we use pretty largely what is known as the "direct method." In that it is necessary to converse pretty freely with the student and to get his reaction. It is not possible for any teacher to use this direct method and hold the attention of twenty or twenty-five pupils in a class of Modern Language and do very much with that class in the average recitation time of forty minutes. In fact, during this period of forty minutes, under the former method used in our school, many difficulties developed which had to be left unprovided for in any way until the

next day. The pupil, instead of giving attention to these difficulties which developed, was probably hurried off to another recitation in Algebra, or Latin, or Physics, or History, his mind entirely diverted from the subject of Modern Language, and he thought nothing more about it until either the evening time or the next morning when he came back to school. But under the new plan, the new method of approaching Foreign Language, the teacher feels at liberty to continue throughout the second period the interest which was created in the first period, and to give to the individual students such attention as their needs during the first period has developed. We are pretty well convinced that two periods thus spent in succession, with but a few minutes of intermission between them, are of more value than three or four periods unrelated and spent at different times during the school day, or in different places without the supervision and direction of the teacher. We feel that the new method provides that the pupil may do his work where the teacher is, where the good air is, where there is a comfortable room, where the library is, where there is a scholastic atmosphere, and where the associations of the class room are. All of these conditions are dissipated in single period method of teaching, and it seems to us that there is no reason for its return. We feel too that since a larger percentage of our people are able to do passing work than formerly it means a good deal for the method, and that after all, if we do have to employ a larger number of teachers, and do have to expend a larger amount of money, that this, in a measure, is compensated for by the fact that our percentage of failure is reduced and the number of repeaters made much smaller.

This system demands a well-trained, enthusiastic, and sympathetic teacher who feels at ease when conversing in Modern Language and tends to communicate this feeling of comradeship to the entire group. It is a very different condition when appealing to the entire group instead of making your appeal particularly to the individual making the recitation. It is not so much that we are decrying the individual making the recitation, but that both the individual and the group are helped greatly by the atmosphere engendered by the entire group.

This new method involves the necessity of the teachers receiving the attention of the whole group and not simply the attention of an individual, and at the same time the teacher is holding each individual responsible for all the information given to the entire group. Brief, rapid questioning conducted in the language itself by the teacher must mean a larger expenditure of time and a better return than it is possible to secure by a single period of recitation.

This double-period Supervised and Directed Study gives to Modern Language a real value, an applied value, and gives to the student a sense of confidence and security because he is learning the language and is not confined to learning something about the language. It enables the teacher to make immediate use of the interest and enthusiasm and sympathy engendered during the first period, because these things are at once applied to the assignment for the following day, and on the other hand, all the points developed in the

first period and not entirely clear to the slow student, may be at once illuminated before the interest in the subject has abated. "Striking while the iron is hot" produces a far more satisfactory result than waiting for twenty-four hours for the iron to cool before the striking is done.

This method means that in the language of the twentieth century we are securing a kind of co-operation and developing a scholastic atmosphere which permeates the entire group and which is not confined to the immediate environs of the individual who has been asked to recite. The teacher is now working with the group, not for them, nor after them, and there is a real universal sense of co-operation.

This plan must mean a longer teaching day, a larger teaching force, a greater expense at the outset, but the educational expense is largely offset by the decrease in the number of failures and in the number of repeaters. This scheme will not succeed where the number of teachers is fewer than eight or ten in high school, but it lends itself best to organizations where the number of teachers is large enough and the number of pupils great enough to make possible the employment of teachers especially prepared to do one or at most two lines of work. The freedom and ease born of a confident knowledge of the subject itself cannot be secured in the working of this scheme unless the teacher is limited to the subjects in which special preparation has been made.

Again, this new method almost entirely eliminates study away from the school building and, therefore, aids the teacher, under whose eyes the work is done, to secure independent, honest, first-hand work. All of us receive a very unpleasant shock when we discover the amount and character of bad information and mis-information which pupils secure when attempting to do any large amount of their study outside of the atmosphere of the classroom.

This plan very effectively eliminates from our faculties all who with open book listen to the pupils one by one recite the pages of the book in the verbatim order of the author. I think this is probably the strongest argument in favor of the method. No ill-prepared teacher can use it; every well-prepared teacher will be delighted with it. The results which come from continuity of effort are never more clearly demonstrated than in the double-period, directed study scheme.

Some one has objected to the scheme on the ground that two periods of forty minutes each is a long time to keep a pupil keyed up and alert. We reply, that between the two periods of forty minutes a three minute intermission for freshening up is given, and that the best results in any kind of work in school or out of school come from the keyed-up condition. Interest is not at once developed at the beginning of forty minutes, it takes some few minutes for the best teacher to create the atmosphere of the recitation, but the interest developed, the state of mind created, the enthusiasm in the subject itself, and the group power engendered by both teacher and group working together has developed a very rare type of teaching. It has sometimes been charged that any such scheme, as this which we have presented, will tend ultimately to develop a flabbiness of mind because of the large

amount of help that the teacher gives and the consequent lack of initiative and effort which the student himself shows. In our judgment, there never was a more vicious pedagogy than this, that a teacher must never do for a pupil what the pupil can do for himself. We find this doctrine preached in some quarters yet. We wonder every time we hear the statement made whether the time element has anything to do in the teaching process. Suppose a boy does, after twelve hours of effort, accomplish a very admirable result in a problem, in the demonstration of a proposition, or in some other difficult task, the same result might come after one hour of effort if this effort had been made under the direction and guidance of a teacher who knew how to direct and teach. We often hear it said that one great teacher maintained that it was a good thing for a young man or a young woman to be thrown out in the middle of a stream and left there to sink or swim and that he never knew one to die that was worth saving. We are here to record our protest against this kind of vicious pedagogy, and we say without hesitation that a directed course in swimming, which will save the boy before he reaches the point of drowning, is more valuable to the boy, more valuable to society, more valuable to the state. The double-period scheme in Modern Language, as well as in other subjects, tends to save the boy and the girl before they reach the point of drowning, and it is our judgment, that for Modern Language, especially, there has not yet been a better device discovered.

Finally, this method is particularly beneficial to the timid student. Requiring concert work of the entire group, of which the timid student is a part, creates in him a kind of confidence which in time enables him to act as an individual without embarrassment. Under the old method, his timidity would only add to his probability of failure.

The analysis of this entire scheme has been made by seeing the scheme at work, not by hearing somebody talk about it, and we are as confident of the general acceptation of the scheme as we are of any new method.

J. Stanley Brown, Joliet, Illinois.

With regard to these two papers the following questions arose:

(1) How many classes does each teacher in your system have?

(2) What does the teacher really *do* during her hour of supervision?

(3) Are the students expected to prepare work outside of the study period thus supervised?

(4) Would it not be well to continue—as the committee's report seems to suggest—this supervision through the high school course?

To these Mr. Brown replied:

(1) Each teacher in our school has three classes, each of which she supervises for one period each day, giving her six periods in the class room.

(2) The teacher uses her time as she sees fit, according to what she feels needs most to be done—review class work, individual attention, etc., etc.

(3) For the first three semesters in which the supervised method is practiced, no work outside the class room is done.

(4) The student has supposedly learned to study during the first year and a half, and therefore supervision would be less needed.

Mr. Brown added that the so-called "independent work" was too often assisted by members of the family or reduced to the act of copying exercises from a last year's note book.

A motion was carried, after much discussion, *that we try to have put into our schools wherever possible, at least one supervised study period in Modern Language.*

It was further urged that on account of the inexperience of the teachers and the many possible ways of using this method, we should proceed slowly, testing and adapting it, as we grow into the necessary readjustment for it.

Afternoon Session, Miss Krieger of Highland Park, presiding. An expression of thanks was given to Mr. R. P. Zimmermann of Champaign, and Miss Ricketts of Urbana, and Dr. Charles A. Williams of the University, for preparing the exhibit of German texts in illustration of the Course of Study. The chair appointed Mr. R. P. Zimmermann as permanent Librarian of German books. Miss Lydia M. Schmidt of the University High School, Chicago, was elected to fill the place of the retiring member on the Modern Language Committee.

The Afternoon Session took up the question of College Entrance Requirements in Modern Languages.

College Entrance Requirements in Modern Language.

What the University wants.

Professor Kenneth McKenzie, University of Illinois.
Professor Charles Goettsch, University of Chicago.
Professor James Taft Hatfield, Northwestern University.
Prof. John Fitz-Gerald, College Entrance Examination Board.

What the High School can do. Dr. William B. Owen, President of the Chicago Normal College.

General discussion.

What can we agree upon as uniform college entrance requirements in modern language?

The chairman had requested the Presidents of the three Universities to send some official representative to discuss this subject and that this discussion might definitely lead somewhere inclosed the following outline:

1. What kind of knowledge does the university want?
2. How much, (kind, pages, etc.), translation ability?
3. How much conversational ability after two years study? After three years study?
4. How much "freie reproduktion" ability after two years' study? Three years study?
5. What are the essential points of grammar to be stressed?
6. What and how much general knowledge of German life, language and literature?
7. Other points which may occur to the representatives.

From Professor Kenneth McKenzie's report:

" * * * Accuracy of pronunciation and mastering of the ordinary grammatical rules and forms of the language must be insisted upon. It is also essential that students be taught to read rapidly and intelligently,—to this end, a large amount of reading must be done in elementary classes, and students must be able when called upon to translate the foreign text into the English * * *

"During the first year of German, French, or Spanish at least 100 pages of modern phrase should be read; during the second year, from 250 to 400 pages.

" * * * Grammar may be taught by any method which insures thoroughness and accuracy."

For a detailed and splendid report of the University of Chicago's position, see School Review, for September 1915—A Revised Course syllabus for a three year High School Course in German. From Professor James Taft Hatfield's report:

"In general I stand on the platform of the Committee of Twelve, a document, however, which is ready for considerable constructive revision.

"The University pleads for a moderate amount of high school preparation, so assimilated that the simplest elements have become a second nature to the student.

"Five elements are mentioned in order of value, though not in order of time in which they are to be acquired.

"1. Penetrating into the central heart of a foreign people's being, as expressed most vitally in its literature.

2. Sprachgefühl: Immediate perception of the meaning of a foreign language without distorting it into an alien idiom.

3. Grammatical knowledge: that bony structure of language which prevents the whole body from slumping into invertebrate flabbiness.

4. Possession of sufficient vocabulary, as capital on which to do business.

5. Sense of background, and perception of alien environment."

A committee appointed by the chair, consisting of the five speakers of the afternoon, to report upon the results of the discussion made the following report:

"That at present the University of Chicago, Northwestern University, and the University of Illinois accept candidates prepared according to the requirements of the College Entrance Examination Board. The committee does not feel that it can at this time give any further indication of the requirements of the Universities."

The dissenting voice of one member of this committee and the sentiment of the teachers assembled lead the chairman to make this comment:

This report seems to demand a type of work, that is much translation, as is evident from the College Entrance Board Examinations, which at present is not the practice in many of our best high schools. This report is but the first step toward an attempt to standardize our work in Modern Language, in which not only university representatives but also high school representatives must work together and then agree as to what can constitute uniform college entrance requirements.

Music Section

This section was convened in Room 126 University Hall, with Assistant Professor Constance Barlow-Smith in the chair. After announcements and greetings Mrs. Smith presented the opening paper on the Past, Present and Future of the Music Section of the High School Conference. The paper was as follows:

The High School Conference has convened at the University of Illinois annually since 1905. The need of such an organization has been proven beyond the slightest doubt by its growth and far-reaching influence. The Music Section has only been an organized unit in the Conference since 1911. It is the infant member, so to speak, as no other section has been added since that time. Prior to the year 1909, there was much dissatisfaction expressed by many teachers of music in the High Schools of the State because they thought that the University was not interested in the subject of music as a regular study in the schools. Complaints were met by the only explanation that could be made, namely: that we had no legitimate claim for recognition because as yet there was no uniform or standardized work.

We all know that great bodies move slowly. Never was the old saying more clearly demonstrated than in the case of the University recognition of music as an educational force in the secondary schools. The University was justified in a way for the course she took because no organized effort was made from the outside. In the winter of 1909-10, the Department of Public School Music at the University endeavored to secure definite information as to the number and kind of music courses that were being offered in the schools. A questionnaire was sent to every Supervisor and special teacher of music in the State. In a very large majority of cases the questionnaire was answered promptly. The questions read:

1. (a) How many graded schools do you supervise or teach?
   (b) What teaching materials do you use?
2. (a) How many High Schools do you supervise or teach?
   (b) What materials do you use?
3. Do you offer systematic courses in harmony and musical history?
4. Is credit allowed for any part of your music? If so, how much?
5. What classification do you have in your High Schools?
6. Is music elective or compulsory in your High School?
7. (a) How many musical instruments do you have in the schools?
   (b) Where are they used?

8. Do you think it advisable to add a Music Section to the High School Conference which convenes at the University each year in November?

9. Do you aprove of a State-wide contest for High School Glee Clubs, Choruses, and Orchestras to be held in the University at the time of Interscholastic? If so, have you any clubs that will be eligible?

About this time, a committee of three was appointed by Professor Hollister, Chairman of the High School Conference, to investigate conditions of music teaching in the High Schools in the State. All answers to the questionnaire were tabulated; likewise added information that was received by personal correspondence. Some visits were made to nearby schools and conditions noted. As most of the teachers who answered the set of questions indicated that they favored the idea of a trial meeting at the University, an invitation was extended to all Supervisors of Music in the State, to be present on November 24th, 1911 for the purpose of discussing problems of mutual interest as well as to consider the advisability of organizing a Music Section in the Conference. A goodly number of progressive teachers responded to the call and in due time, became charter members of this organization.

The first item of business was the presentation of the report by the Committee of Investigation. This report was read and will be found in Bulletin No. 6, Proceedings of the High School Conference, 1911.

It was thought best to have but one paper at our initial meeting and that to be given by a non-musician who was known to be a successful educator possessed of the conviction that music is a necessary factor in the lives of High School girls and boys and that the subject has a legitimate place as an educative force in all well regulated High Schools.

Principal Charles H. Kingman of Kankakee was a happy choice, for his convictions were pronounced and he had the courage to speak out. I suggest that every supervisor and music teacher present who has not already done so will read Principal Kingman's paper in Bulletin No. 6, Proceedings of the High School Conference, 1911, a copy of which should be in every superintendent's office in the State. At the close of his address Principal Kingman moved that those present form a permanent organization to be known as the Music Section of the High School Conference. The motion was seconded and unanimously carried.

At the close of the afternoon session it was voted that the chairman be instructed to appoint a committee for the purpose of formulating a plan for standardization which should include not only chorus singing but Harmony and a course in Music Appreciation based upon the works of the great masters of music of each epoch, the report to be submitted for consideration at the next regular meeting of the Music Section.

The chair accepted the responsibility and after due consideration appointed what came to be known as the Standardization Committee. It consisted of one Superintendent of Schools, one Supervisor of Music in the grades and High School, one Township High School Principal, one city High School Principal, one Township High School Supervisor, and one representative from the Public School Music Department of the University. The committee proved to be an enthusiastic and painstaking one. After considerable correspondence and several long sessions a report was prepared and presented on November 22nd, 1912, at the morning session. Two papers were read and discussed as a preparation for the discussion of the report which was scheduled for the afternoon. Miss Clara I. Dailey of Peoria contributed a paper on "What an Appreciation Course in

Music Means." This paper brought out much discussion as did also W. Otto Miessner's paper on "Musical Theory in the High School." Mr. Miessner was at this time teaching in Oak Park. I feel that I voice the sentiment of every Supervisor in the State of Illinois when I say that we regret his adoption by the State of Wisconsin. His professional interest in the report of the committee, his helpful suggestions, and his gentle but forceful manner, endeared him to us and we feel that while his affiliation with our Music Section was limited to one year, his influence is still felt and we are proud to have had him for a time.

Principal C. E. Lawyer of East Aurora was a most efficient and enthusiastic member of the Standardization Committee. No task was too great for him and every service was cheerfully given. His paper at the opening of the afternoon session was upon "The Value of Music Courses in the High School." I cannot go on with this paper without paying especial tribute to his memory. The Supervisors of music in the State of Illinois have lost a valued friend and champion by the untimely death of this good man.

The standardization report was discussed in the most thorough and yet informal manner, and by the time that the courses in Harmony and Musical Appreciation had been accepted nearly everyone present had taken some part in the work. The following is the report of the committee as finally adopted. See Bulletin No. 9, Proceedings of the High School Conference, 1912.

Before adjournment a motion was made, seconded, and duly carried requesting the chairman to prepare a syllabus of an Appreciation Course that should conform to the outline as adopted in the report; the same to be presented for discussion at the next annual meeting.

November 21, 1913, found the Music Section very much alive to its privileges and a keen sense of responsibility was evident throughout its membership. A copy of the syllabus was handed to each member at the morning session so that important points might be noted before the afternoon discussion. The syllabus of "A Music Appreciation Course" is printed in Bulletin No. 10, Proceedings of the High School Conference, 1913.

We were glad to extend a welcome to Mr. Osborn McConathy who had recently shifted from Massachusetts to Evanston. He represented Northwestern University and the Evanston public schools. In presenting his paper, he availed himself of a Yankee privilege and changed the title from "Outline of Work that Should be Accomplished in Grades Preparatory to Music Courses in the High School" to read "What Should the School Offer?" This proved to be the keynote to his excellent contribution. A list of definite results, susceptible to tabulation, was put upon the board and after an interesting discussion, was accepted as "being worthy of entrance credits to the High School."

Superintendent M. L. Test, who had served faithfully and well as a member of the Music Committee for two years, gave a ten-minute talk upon "The Observations of a Superintendent." The speaker soon convinced us that he was a very keen observer, his criticisms were kindly meant and helpful; he decried the illy-prepared supervisor and lauded the hard worker who was too often overloaded with work and not particularly appreciated. One of his observations was "that superintendents very frequently did not observe and interest them-

selves in music-education." We hope to hear from Superintendent Test at some future meeting as he is interested in music-education for the High School girl and boy and is one of the most forceful extemporaneous speakers on the subject that has come among us.

As was anticipated, the discussion of the syllabus was, to say the least, animated. The chairman learned a brand new fact as soon as the first gun was fired in the shape of the question, "Madam Chairman, just what do you mean by Music Appreciation?" It is a difficult task to preside at a discussion of one's own syllabus. Everyone seemed to forget that they had just adopted a course in Appreciation of rather elaborate proportions for the grades and here the cry was raised that the work was too difficult and too extensive for the High School. The chief trouble lay in the fact that people did not remember the adoptions of the previous year with reference to the courses in Harmony and Music Appreciation and, as I said before, even the work of the forenoon was temporarily forgotten. Of course, there were a number of supervisors present who had no knowledge of the work that had been accomplished since 1909-1910, but the chairman had anticipated some misunderstandings from this source and had purposely provided typewritten copies of each of the previous adoptions. So, after a while, we began to consider the syllabus from the standpoint of advanced work to be taken by the students in as many terms as were necessary to accomplish it and then, and not until then, was the plan of the course understood. It would be unjust if I made no exception to the above statement for there were supervisors present who testified that they had accomplished as much and more under favorable conditions in their high schools.

The discussion was led by Mr. E. L. Philbrook of Rock Island who claimed that he did all of these things and more but he objected vigorously to testing the voices of 300 children and to requiring outside preparation; he gave me the impression of objecting to the syllabus, just why I could not detect, however, he was very outspoken and his views were as valuable as those to the contrary. As we were all working toward the same end, that is, for improvement and standardization, it was essential that the syllabus which represented a decidedly advanced course should stand or fall by its own merits.

Miss Minerva Hall, at that time of Decatur, Miss Margaret Pouk of Aurora, Miss Violet V. Collins of Chicago, Mr. Osborn McConathy of Evanston and several superintendents and professional musicians continued the discussion until it was evident that conditions in the schools represented were widely different. In some instances, credits were allowed all out of proportion to the amount of time and labor that was spent upon the work; while in others, the number of credits were insufficient to form an incentive for the selection of music courses. Several teachers said that two twenty minute song-periods a week was the maximum time allowed and that they were expected to do only chorus work.

Because of the recognition of these varied conditions, the chairman suggested that those who were able to make the experiment should have the privilege of putting the work of the syllabus in practice for a year and giving a report on

the success or failure at the next regular meeting of the section. Miss Grossman of Savannah moved that the suggestion be accepted and the motion was unanimously carried.

At four o'clock we made real University history; we may say that we achieved a real inning because the Music Section presented a concert that was quite unique and the first of its kind on the campus. We were hosts to the entire Conference, all sections adjourned to attend our function at the auditorium. The concert was offered as an educational demonstration and was given by means of reproduced music except in the case of the singer who was accompanied by reproduced music. The first half of the program consisted of selections on the Player-Piano by James McDermid, the well-known artist composer. The charming singer, Sybil Sammis, was accompanied by Mr. McDermid on the same instrument by means of mechanically arranged music. Reproduced music was used to demonstrate a splendid lecture on musical history that was given by Mrs. Frances E. Clark, whom we all know as the capable director of the educational department of the Victor Talking Machine Company.

The concert was a success from start to finish. We are proud of the event and are encouraged to think that we proved the *educational value of reproduced music.*

At the morning session of last year (1914), the discussion of the Syllabus "A Course in Music-Appreciation" was opened by Miss Grace V. Swan of Barry followed by Miss Mildred Miller of Harrisburg Township High School, and then Miss Ruth Duncan of Mt. Sterling. Each of the speakers had used the plan and testified that they were succeeding with it. Miss Abla Mohr of Watseka reported giving part of the course and that she was encouraged by the showing. Miss Clara Renfrew of Cerro Gordo said she also followed the plan of the Syllabus and was getting good results. The following speakers told of the courses that were offered in their schools and the amount of credits that were allowed for the work: Miss Helen Parker, Chatham, Miss Ruth M. Clapp, Urbana, Miss Laura M. Honk, Streator, Miss Marianne Miller, Kankakee, Miss Guna C. Kelley, Clinton, Principal Livingston, Lockport Township High School, and Miss Dorothy Griggs, Lovington Township High School. A spirit of fairness prevaded the whole discussion, several speakers said that they were not able to do the work of the Syllabus either because of lack of time upon the part of the pupils or themselves or from a lack of interest upon the part of school authorities, but somehow the Syllabus itself, did not seem as formidable as it had appeared the year before. The Syllabus was adopted "as a standard of work for the High Schools in the State" by a unanimous vote.

The High School Manual contains brief outlines of the Music Courses that will be accredited by the University. You will find that the Musical History and Harmony Courses are practically the same as was adopted by this section in 1912. The course in Appreciation is the same omitting formal study of Harmony and Musical History. The "Composite Course" includes Harmony, History of Music and Appreciation which takes in the work of the Syllabus. By granting credits for courses in Harmony and Musical History as separate studies the University will accept *less* work than the Syllabus contains. To-

day's program provides for a discussion upon this subject at the afternoon session. It is earnestly desired that the subject will be threshed out to a finish.

The afternoon session of last year was given over entirely to a discussion of work from the outside. Director J. Lawrence Erb of the School of Music gave a paper on the subject of "Accrediting Applied Music in the High Schools." He favored the idea and gave statistics to show where the plan was effective. He discussed the problem from all sides and stated his personal convictions; he showed where the University had no power at present to grant entrance credits for Applied Music or, at least, he said that the step would probably not be taken for some time.

The discussion of Director Erb's paper was opened by Professor W. D. Armstrong, Director of the Armstrong Conservatory of Music at Alton, who considered the subject from the four available departments, namely: Vocal and Instrumental Music, adding History and Theory as collateral studies. Professor Armstrong emphasized the thought that the text books as a rule are not well arranged; he also made the point that the supervisor should not only be a vocalist but able to play the piano and be a theorist as well.

Mr E. R. Lederman, Centralia, followed—as president of the Illinois Music Teachers' Association—Mr. Lederman explained that one of the aims of the Association is to have Applied Music accredited in the public schools of Illinois. He also favored higher musical education for the supervisor. The next speaker, Mr. O. V. Shaffer of Danville, treated the subject from the viewpoint of one whose entire work has been done in a private studio which was exceedingly interesting. Miss Minerva Hall, Normal University, handled her part of the discussion by asking the question, "Why should we credit outside study of music under private teachers during the High School period?" She then proceeded to answer the same using good logic. Miss Hall gave the plan that prevailed in Decatur where through her efforts Applied Music was accredited. Many questions were asked of and answered by Director Erb before time for closing the discussion.

This brought us to the present session where we are to have Round Table discussions upon the topics:

(a) What phase of music work in the High Schools appeals most to girl students; to the boys; to the combined section?

(b) Best methods of preserving and improving the voices of High School students.

(c) The wisdom of offering music courses in the High Schools where there is no provision for singing.

(d) High School Libraries.

1. A minimum list.
2. A good working library.

(e) New phases of the accrediting problem.

With the above glimpse of the past and present, we may look hopefully forward to the fulfillment of our ideals in the work of the future. We have started out to have the best system of Public School Music Teaching in America. This is the only organization that can bring it about. The University has

already accepted our subject and placed it on her entrance credits list. The Music Section has had a decided influence in establishing this recognition.

The Chairman of the General Conference has presented our cause because he was convinced that the supervisors were making the effort to standardize their work. The officers of this department have contributed of their time, ability, and strength. The Director and Faculty of the School of Music have co-operated in every way possible to make the Music Department a success. The chairman feels deeply conscious of the many kindly services and courtesies that have been so freely extended to her and bespeaks the co-operation of all members for all incoming chairmen; she prophesies a bright though busy future if the Music Section will take advantage of the present carefuly laid plans and move steadily on to the fulfillment of its highest ambitions.

The following is a complete list of past and present officers of the Association:

Sallie M. McCall, Urbana,
C. E. Lawyer, Aurora,
M. L. Test, Mt. Sterling,
Margaret M. Salisbury, Chicago,
Annis C. Jewitt, West Aurora,
Prin. H. J. Alvis, East St. Louis,
Grace V. Swan,
W. Otto Miessner, Oak Park,
Mrs. Elizabeth McNair, Mattoon,
Ailsie E. Goodnek, Jacksonville,
J. E. Robinson, Chicago,
W. D. Armstrong, Alton,
E. R. Lederman, Centralia,
Mrs. Constance Barlow-Smith, University of Illinois.

This paper was followed by a round-table descussion which was very generally participated in and which occupied the remainder of the morning session. The discussion took the form in part of an experience meeting, and many interesting facts were brought out as indicative of the character of music work in the high schools.

The afternoon session was called to order at 2 o'clock. Miss Clapp, of Urbana, and Miss Glenn, of Bloomington, were elected to succeed Mr. Lederman and Mr. Robinson on the committee.

The following paper on Musical Libraries in the High School was read by Mr. A. E. Robinson, Director of the Department of Public School Music, American Conservatory, Chicago, also Supervisor of Music, Hyde Park High School:

Although the subject of this paper is "Musical Libraries in the High Schools," I think one could not do better than take as a text a recent statement

by Julia E. Crane, of the Crane Normal Institute, Potsdam, N. Y., in which she says, "Unless music touches the real life of the masses, it certainly has no place in the public schools." I believe we all agree with that subject. With this idea in mind let us proceed with the discussion of our subject. The question is, how may we best reach the masses in this department of education?

In a vicinity where there is little or no interest shown in music and where music is not taught in the high school, the need of a stimulus is much greater than in a community where there is an interest in music and where the music work of the high school is well organized. I would suggest, therefore, as a stimulus to an interest in music for a vicinity similar to the one first mentioned, that an opportunity must be given for the residents of the community to hear music. At the risk of saying something that has been said many times before, I shall state that the best way to accomplish this end is by means of the victrola, or the mechanical piano player, or both. It would seem, therefore, that a number of excellent records should serve as a nucleus of a musical library for the high school. Around such a beginning a library can be developed easily. Records and musical numbers, however, should be judiciously selected, and intelligently presented. Otherwise it is quite possible that these mechanical aids may become a mere means of entertainment.

As a first aid to the intelligent understanding of music to be presented in the manner already suggested, I know of nothing better than a book called, "The Appreciation of Music," by Thomas Whitney Surette and Daniel Gregory Mason. Inasmuch as this book, the copyright of which was secured in 1907, is now in the sixth edition, it would seem that there is a good demand for just such an aid to the intelligent perception of music. The authors state that the book was prepared "to provide readers who wish to listen to music intelligently, yet without going into technicalities, with a simple and practical guide to musical appreciation, written from the listener's rather than from the professional musician's standpoint." This book treats the subject of "The Appreciation of Music" most comprehensively, yet in a popular style, so that the interested but untrained student, by using this work in connection with the mechanical instruments may gain a great deal of information without the assistance of a special teacher of the subject. The next book to be added to this nucleus might well be, "What we hear in music," by Anne Shaw Faulkner. While the work first mentioned gives a particular phase of "what to listen for" in music, using and explaining such terms as, imitation, transposition, contrast, restatement, balance of phrases, besides devoting many chapters to form and analysis, this book by Miss Faulkner gives the student another phase of the subject. In the preface the author makes the following statement "When listening to music we find that there are four fundamental ideas which music can express:

1. National feeling,
2. Formal construction,
3. Poetic thought,
4. Program music."

These two books used judiciously, in connection with the best records, by any intelligent superintendent, principal, or teacher, for one hour every week, should be of great service in stimulating the interest of a passive community in a subject in which interest should be universal. After an interest has been awakened, these young minds may be led further into the subject by the perusal of such works as Standard History of Music by James Frances Cooke; First Studies in Musical Biography, by Thomas Tapper; and especially Famous American Composers, by Rupert Hughes. Of course there should be a good, reliable music dictionary such as, Elson's or Baltzell's, or Encyclopedia of Music and Musicians, by Stokes.

For the larger high school where the course in music is already an established fact I should let the books already mentioned serve as a foundation for a larger library. Songs and Song Writers, by Henry T. Finck, gives the reader a most illuminating survey of the great song literature of all of the great song producing nations, and opens up a vast field to the uninitiated. As a companion for Mr. Finck's admirable book what could be better than the History of German Song, by Louis C. Elson? Further additions in the field of musical history should include History of Music by Baltzell; A Popular History of Music, by Matthews; Outlines of Musical History, by Hamilton; and, if a very serious work should be needed, I know of no better book than The History of Music by Waldo Seldon Pratt.

In biography, which is very closely allied to history, the list should include both collective and individual biography. Under the former heading the following are worthy of mention: The Masters and their Music, by Matthews; Great Composers and their Work, by Louis C. Elson; Modern Composers of Europe, by Arthur Elson; Among the Great Masters of Music, by Rowland; Standard Musical Biographies, by Upton; and Life Stories of Great Musicians, by Streatfield. Of individual biography, a comprehensive list should include, Personal Recollections of Wagner, by Neumann; A Biographical Study of MacDowell, by Lawrence Gilman; Schumann, by von Wasielewski; Liszt, by De Beaufort; Grieg, and His Music, by Finck; Chopin, by Liszt; Beethoven, by D'Indy; Beethoven and His Forerunners, by Mason; Beethoven, by Schindler; and Brahms, by Maitland.

Musical Theory is a field that is being developed gradually in the modern high school. It seems to me that the first book in this department to be put in the library of the high school should be, First Year Musical Theory, by Tapper; to this should be added First Year Harmony, by Tapper; First Year Analysis, by Tapper; and Second Year Harmony, by Tapper; although personally I use in my own harmony classes in high schools Chadwick's Harmony, and Modern Harmony in its Theory and Practice, by Foote and Spalding.

Under essays and general works, the following are of interest: Stories of the Wagner Operas, by Guerber; Stories of the Famous Operas, by Guerber; The Standard Oratorios, by Upton; The Standard Operas, by Upton; Book of the Operas, by Esther Singleton; The Symphony since Beethoven, by Weingartner; Symphony Writers Since Beethoven, by Weingartner; Music Notation and Terminology, by Mr. Gehrkens, of Oberlin; Musical Essentials,

by Maryott; How to Listen to Music, by Krehbeil; How Music Developed, by Henderson; What is good Music, Henderson; How to Appreciate Music, Kobbe; Guide to Music, by Daniel G. Mason; Education of a Music Lover, by Edward Dickinson; How to Listen to An Orchestra, by Annie W. Patterson; Orchestral Instruments, by Mason; and others. One of the finest things for those who have the opportunity to attend the best concerts in a large city is The Standard Concert Guide by Upton. In this work the author prepares one to listen to any of the really great works of the great masters. Music and the Higher Education, by Mr. Dickinson, of Oberlin, is very fine, although it is over the heads of high school boys and girls.

Since music in the public schools is being looked at more and more from the standpoint of vocational training, it might be advisable to include works that would serve as an inspiration and guide to those pupils who anticipate choosing music in some capacity as a profession. Mr. Tapper has given some very good advice in "The Music Life and How to Succeed in It." Success in Music and How it is Won, by Finck, is excellent. Another book by Mr. Tapper, on "The Education of the Music Teacher," is of great value.

Last and greatest of all, I have left a place in the high school library, for Grove's Dictionary of Music. Here is a great work, in five volumes, containing authoritative articles giving most valuable information on every topic relative to the art of Music. Such a work should be accessible to every high school student. The cost should not be forbidding. Almost any high school can make twenty-five dollars and a great deal more by giving a single entertainment. Would not money spent in this manner be fully as profitably invested as if used for the purchase of outfits for our high school athletes?

Now a suggestion as to the use of our musical library. In my estimation, the incentive for the use of the books on music should be furnished as much by the teachers of English as by the teachers of music. Why should not the work in music and the course in English be correlated? For example, in theme work the pupil who is especially interested in music might not only be permitted, but encouraged to choose occasionally subjects in the realm of music, such as the origin of the Folk Song, American Folk Songs, or The Choral. Why should a child who has artistic tastes and temperament be forced by an unsympathetic teacher to choose such deadening subjects as the following: "Explain how some simple instrument, contrivance, or machine does its work.

Select if you can, from the following list:

1. A grindstone.
2. A nutmeg grater.
3. A thermometer.
4. A churn.
5. A compass.
6. A mouse-trap.
7. An ash-sifter.
8. A fountain-pen.
9. A spirit-level.

10. A horse rake.
11. An egg-beater.
12. A sundial.
13. A wrench.
14. A student-lamp.
15. A carpet-sweeper."

This list is taken from a book on English composition now in use in the first year's work in English in the high schools of Chicago. And stranger still, some teachers of English have souls so practical, so mechanical, so unromantic, that they insist on all the pupils in a class selecting some subject from this group. Could anything be more deadening to a student with a musical temperament? I imagine that there is a certain type of mind that could be interested in a grindstone, but to have to write on such a subject would be fatal to me, I am sure. It seems to me that conferences between teachers of music and English are not only desirable but absolutely necessary. A pupil who is vitally interested in music has neither the time nor the inclination to look up grindstones, egg-beaters, and carpet-sweepers. Makers of text books on English as well as teachers of the subject should recognize this fact and assign occasionally musical subjects, or when a subject is distasteful, permit the pupils to select for themselves.

Teachers of music and English can work together in producing plays and entertainments. Every high school should have a number of copies of "Fifty Shakespere Songs," for low voice, from the Musicians Library, published by the Ditson Co., and some time during the high school course the pupils should be taught to sing in unison, a number of these songs. These songs are classics both as to music and poetry. One of the beautiful memories of the high school days should be such gems as the Schubert setting of "Who Is Sylvia?" and "Hark! Hark! the Lark," "Under the Greenwood Tree," by Busch, or Purcell's "Come Unto These Yellow Sands."

The average high school pupil will remember these songs long after his Virgil and Cicero have ceased to trouble him.

Before reading his paper Professor Erb, Director of the School of Music, University of Illinois, passed out the following schedule for accrediting, taken from the High School Manual:

Music

At the present time (June, 1915), no high schools are accredited in Music, and credit is therefore given only by examination at the University. As soon as possible, however, schools offering acceptable work in music will be accredited to the extent of one or two units.

Following are the Definitions of Units for Accrediting:

Courses in Harmony, History of Music and Musical Appreciation will be accredited on the same basis as other High School courses, namely: Five hours of recitation per week and five hours of preparation per week for 36 weeks

will receive one unit of credits. Five hours of recitation per week without preparation will receive one-half unit. Written work will be required in all courses, but preeminently in Harmony.

I. Harmony, First Year.

Elements of musical notation; Construction of Major and Minor scales; Keys; Signatures; Intervals, general and specific; Key relationships; Consonances and Dissonances; Triads, Primary and Secondary; Inversions of Triads; Chord Progressions; Simple Melodies harmonized with Tonic Dominant and Sub-dominant harmonies.

Second Year

Review of Triads; Seventh Chords, Primary and Secondary; Harmonization of simple Melodies with Triads and Seventh Chords; Harmonic Analysis; Original Work.

II. History of Music: A Text-book course, with recitations and written work, touching the beginnings of music, and including a fairly comprehensive study of the development of music since A. D. 1600 and acquaintance with the lives and productions of the greatest composers and performers. One year.

III. Music Appreciation based upon the standard choruses and instrumental selections from the works of the great composers of each epoch, with instructions in Elementary Theory, Sight-Singing and Ear Training. One year.

IV. A composite course may be offered including Harmony, History of Music and Musical Appreciation, any two of these subjects, and subject to the same regulations, with the added specification that in such a course at least one recitation per week in Harmony, with written preparation, shall be included. Two years.

V. Regulation regarding Teachers.

No High School Music will be accredited for entrance to the University where the Teacher of Harmony or History of Music to be offered for accrediting has not had at least a year of study in the subject to be taught in some professional training school, unless he has received a diploma or degree from some recognized institution for the training of musicians or music teachers.

The following is Professor Erb's paper:

Some New Phases of the Accrediting Problem

In discussing the matter of New Phases of the Accrediting Problem it is necessary to recognize the two-fold meaning of the term, Accrediting. In its first connection it has reference to the acceptance of High School work for University entrance, and in its second it has reference to the acceptance of work done outside the High Schools for credit in the High Schools. It is my purpose to discuss both aspects of the subject and in the order stated.

A subject so vital and so much at a period of flux as is the accrediting problem must necessarily take on new aspects from year to year. Last year at the High School Conference, the statement was made in good faith that

the University of Illinois would, beginning September, 1915, grant entrance credits in Music; 1, 1½, or 2 out of the total of 15, and that such credits would be granted for either Theoretical or Applied Music. Such was the impression that the speaker received in looking up the records of the action of the Senate and also in discussion with certain members of the faculty.

But later investigation disclosed the fact that in all of the deliberations of the University Senate, Applied Music had been deliberately and persistently side-tracked, and without question it was the sense of the Senate that only Theoretical Music should be accredited. A special committee sifted the matter thoroughly and came to the conclusion that there was not the slightest doubt that the Senate action was to include only Theoretical Music.

Therefore when the High School Manual was issued for the current season, this interpretation of the new ruling was published as was a statement of the Definition of Units for Accrediting. If you have observed the Manual at all carefully, you will notice that the requirements have been shaded down as compared with the Syllabus adopted by the High School Conference two years ago. This was done after much thought and inquiry because the experience of the High School Visitor and of the Director of the School of Music both established the fact that the Syllabus, while a first-class ideal outline of the course, was perhaps a trifle too exacting for a great many High Schools of the State; and the consequence was that many schools were deterred from considering the possibility of application for University recognition because the course was too difficult. Moreover in the absence of any considerable number of well trained teachers of Harmony, History of Music, and Musical Appreciation, in the schools, it was felt unwise to turn over the entire teaching of such subjects for the present to the High Schools. There is reason to believe that in the course of time the High Schools may be able, at least the best of them, to take care of practically all the required work in these subjects, but for the present it is only fair to say frankly that there are not enough well qualified teachers to do the work, and so the University must perforce take care of at least part of it.

This brings us to the consideration of what has actually been accomplished in the past twelve months and I am forced to say that the results have not justified our expectations. There has been a very large number of inquries from High Schools about accrediting previous to the action of the University Senate or immediately subsequent to it, and we were led to believe that there would be an immediate rush for it, but so far I have heard of only a very few schools which are accredited in any one subject and I know of none in which the entire three subjects are accredited. For the information of those who may not have received the High School Manual we have distributed the statement as it was printed.

There are several difficulties which appear in the administration of the scheme; first, too many schools, it seems, are offering a sort of hodge-podge, heterogeneous course which they call "Music" and which spread itself over everything under the sun. The pupils from such schools come in and tell us

that they have had fours year of Music and when we ask them what kind of music, they start out with a list that would appall us if it did not make us sorry. So I should say that the first necessity in any school where accrediting at the University is in mind will be to organize definite courses in one of the three accredited subjects and teach them systematically with both recitations and outside study, including written work, and with a sufficient number of recitations per week to make it possible to consider the work seriously. I know that there are some who will tell me that it was not so very many years ago when even in the great conservatories Harmony, History, and so on, were taught in classes meeting only once or twice a week; but I would reply to such a statement that because of this condition the quality of the teaching was usually inferior, such that only the most gifted in the class ever got anywhere. Besides in such cases the students were specialists in Music who already had a musical back-ground and could profit better by such an imperfect system. As a matter of fact, the teaching of Harmony has been so bad that it has been largely discredited by the more advanced musicians and critics as an impediment rather than an assistance to the aspiring composer and of only small value in musical analysis, and so on. The accusation is just only in so far as it refers to the methods used in teaching it, not so far as the subject itself is concerned. But if Harmony is to have any value which will make it a fit subject for recognition by earnest educators in all lines it must be thoroughly and systematically presented. What I have said of Harmony applies equally to History and Appreciation. If the courses are given at all, they should be given well. If they are to be classed as accredited subjects, they should have earned credit just as Latin or Arithmetic or any other subject has earned it.

Now I have been speaking as if the sole use of the term, "accrediting" was in connection with admission to the University. Strictly speaking, this is not my idea, but we have gotten so in the habit of using our University entrance credits as the criterion for High School courses that one falls easily into this error. After all, the great majority of High School students do not go to college, and it is for them even more than those who do go to college that I would plead thoroughness in the presentation of Music courses. The college students may, in a measure, overcome the handicap of poor teaching in the High School; but he who does not go to college is at a serious disadvantage unless his High School education is thorough and based upon sound methods. Not as the Director of the School of Music of the University of Illinois, but as a taxpayer of the State of Illinois with a boy in the High School, would I plead for the establishment of the very best possible courses in music, all three of the theoretical courses, if possible, but rather one and a good one than three poor ones. And on the same basis, I would urge a consideration of the campaign of the accrediting of Applied Music. It will be only a matter of a few years before the University will accept it, I am sure; but if the University should *never* accept Applied Music, nobody can deny the value of the work educationally and as a community asset, to say nothing of its benign influence on character. You are aware that in some of our institutions of learning, it

is becoming more and more common for students to supplement the *required* courses with others of a cultural nature, even to the extent of adding a fifth year. Indeed, the traditional attitude toward the Arts course is that it shall be in the main cultural rather than vocational. So that a Bachelor of Arts might quite conceivably be a brilliant student and yet not specifically prepared to make a living, so far as the college course is concerned. Unfortunately at the present time, our High Schools are too commonly ground between the upper and nether millstones of College Preparation and Vocational Training, that their true function of preparing the great majority of their students to get the most out of life, is lost sight of. If, in the readjustment which is going on with the introduction of the Junior High School, the real function of the High School may present itself, all classes of society will be the gainer.

The relation of all this to the accrediting of music is evident. Because our High School curricula have become devoted too exclusively to either College Preparation or Vocational Training the well-balanced cultural course for the majority of the students has been side-tracked. In such a cultural course music has a *right* to be included,—the music itself, for its cultural value, not a lot of things *about* music or its structure, but the living, pulsing, appealing, inspiring, artistic product itself, in so far as the immaturity of the students and the limited time at their disposal makes artistic results possible. That Public Education ought to include so powerful an influence within its scheme should need no argument,—and that it should be included free of charge, too. It is significant that in some cities, thorugh the co-operation of the school authorities and the Women's Musical Clubs, much is being accomplished in the right direction. Only yesterday I received a report from a large middle western city in which the Supervisor called attention to the fact that *music lessons at ten cents a lesson* were being given in the school building under the auspices of the Board of Education by members of the Women's Clubs and presumably for credit.

A few days ago I received from a town of five-thousand inhabitants in Ohio the schedule of their accrediting plan, by which Applied Music was fully accepted, as well as, of course, the Theory work done in the schools. So you see it is not only the large cities that are moving. It seems to me that there is no town so small that successful accrediting of Applied Music is impossible, if properly approached. And when you have established your courses, have gotten your machinery to running, *without creaking* or stopping on the upgrade just when you most need it to work, then, good citizens of the sovereign State of Illinois, if you will come, fifty or a hundred schools strong, and *demand* accrediting of the work of your students, I have a suspicion that the University of Illinois, which exists only to serve the people, will respond to the demand. But there is nothing to be gained by demanding credit before you have the work to show. First do the work, *then* ask for credit, and I have faith to believe that by that time the entire problem will be solved.

A lively general discussion followed the reading of Professor Erb's paper.

Physical Science Section

The morning session was held in the Physics Lecture Room, the presiding officer being Chairman C. M. Wirick of the Crane High School, Chicago. Papers were presented by Dr. Kunz, of the University and by Mr. W. E. Tower of the Englewood High School, Chicago. Both papers were discussed. Members of the section were then given opportunity to inspect the Physics Laboratory.

The afternoon session was held in the Chemistry Building. Dr. David Klein of the State Food Commission, Chicago, presented a paper on "The High School Teacher as a Factor in Enforcing the Food Laws." This was followed by a round table discussion of Professor Alexander Smith's printed address on, "Some Possible Items, Old and New, for the Course in Elementary Chemistry." Dr. B. S. Hopkins of the Chemistry Department was elected Secretary of the Section for the next three years. Opportunity was given for inspection of the Chemical Laboratory. The abstracts of the papers follow, except the paper of Alexander Smith, which has been printed for distribution free with the compliments of the Century Company, New York.

F. R. Watson, Secretary.

Abstract of paper by Dr. Jacob Kunz on

The Photoelectric Cell and its Applications in Modern Physics

The photoelectric cell consist of a small glass bulb with two platinum electrodes, one of which has the form of a circular ring. An alkali metal, sodium, potassium, rubidium or ceasium is distilled into this bulb and hydrogen admitted so that the pressure is a few millimeters. If now a potential difference of 280 to 400 volts between the electrodes is applied, a glow discharge takes place, and forms a very brilliant coloured sensitive layer on the alkali metal. The hydrogen is then removed and replaced by either helium or argon or neon under a small pressure. If now a potential difference is applied, a photoelectric current occurs between the two electrodes as soon as a beam of light strikes the alkali metal. The current is very nearly proportional to the intensity of the light. This is the reason why this cell can be used as a photometer.

The photoelectric effect is a very interesting one; it stands among the prominent subjects of investigations at the present time. It is connected with photochemical effects and it is a photochemical effect, which is the basis of our material life, the transformation of carbon dioxide into starch in the green leaves under the action of the light from the sun. It is a transformation of radiant energy of light into chemical energy; similarly the photoelectric effect is a transformation of light into electrical energy.

This transformation plays a very important role in the present theories of radiation. Very surprising conceptions of the energy of light have been formed, in which it is assumed that the energy is made up of units or quanta, where each quantum of energy is proportional to the frequency. This theory seems to receive support from the laws assumed for the photoelectric effect. There is, however, not one of these laws established beyond discussion.

The photoelectric cell can be used as a photometer for various purposes. Among the applications that have been made so far the most interesting is that of the photometry of the light from fixed stars, especially of the double star systems. These investigations carried out by Professor Joel Stebbins by means either of the photoelectric or the selenium cell have given a new and powerful tool to astronomy, which allows to determine the radius of a star, the distance between the two stars of a double system, the mass and density of a star, and the surface brightness if the parallax of the star is known. The double star Θ Arionis has a mass of about twenty times larger than the mass of the sun, the radius of one star is five to fifteen times larger than the radius of the sun, and the density six times the density of air under normal conditions. The light emission of another star β Aurigae is about 300 times larger than the light emission of the sun.

Paper by Mr. W. E. Tower, Englewood High School, Chicago on

The Effective Teaching of High School Physics

The teacher of high school physics is described in this paper as a salesman, as an inspirer of youth, as an efficiency engineer, as well as being a teacher. It will mark an epoch in the teaching of science in our land when our colleges and universities fully awake to the fact that it is just as desirable to give prospective science teachers instruction in the principles and methods of presenting science as it is to give engineers, librarians, and agriculturists, instructions in the principles and methods of the work ahead of them.

The following quotation from Thorndike's "Principles of Teaching," page 257, bears upon this point.

"The effiiciency of any profession depends in large measure upon the degree to which it becomes scientific. The profession of teaching will improve (1) in proportion as its members direct their daily work by the scientific spirit and methods; that is, by honest, open-minded consideration of facts, by freedom from superstitious fancies or unverified guesses and (2) in proportion as the leaders in education direct their choice of methods by the results of scientific investigation rather than by general opinion."

In the hope of learning something of the uniformity or lack of uniformity in the methods followed by physics teachers today, a list of six questions was sent a few weeks ago to forty teachers of physics, all members of the Central Association of Science and Mathematics Teachers and therefore presumably progressive, located in the ten states nearest us. Twenty-eight replies have been received. A summary of these will throw some light upon the question of uniformity of procedure and plans in the work of experienced teachers of physics at the present time.

Question 1. "What is the most effective plan that you have used in securing effective results in recitation?"

The variety of answers to this general question is illuminating. One says—"My recitation is a combination of study, lecture, demonstration, oral and written quiz, together with such discussions as naturally come up." Another—"Nothing can take the place of thorough questioning for which even the experienced teacher may well prepare himself. Do not give the entire time to the solution of problems." "I never hold recitations," says a teacher in a boys' school. "I have a ten minute written test each day and lecture the rest of time."

Question 2. What general plan do you find gives the best results in laboratory work?

The replies to this question show as great variety as do those just given although a number are in agreement upon the following points: "Thorough organization of work." "Set a minimum list of experiments, but assign a list of optional practical exercises giving extra credit for the same." "Have individual work, do not mix boys and girls." "When possible, apply laboratory work to local conditions." Quite a number recommend applying principles to practical or local situations.

Question 3. What tests do you give? How many? When?

The great majority consider it advisable to give written examinations at intervals of a month or so, together with a final examination. The written test is a most wholesome part of the discipline of our work as teachers. It strengthens not only the memory but the ability to organize and apply information and principles as well. Further, the door to many desirable occupations and positions is entered only on successfully passing written examinations. Facility in this as in other matters is dependent upon practice. Our high school pupils should be well trained in this respect.

Question 4. Do you require exercises handed in at each recitation?

One-half says—"No." One-sixth says—"Yes." One-third says—"Occasionally." "I think I should," "Would like to." My own experience is that written exercises, not necessarily problems, at each recitation is a helpful plan. It makes definite the preparation of each lesson. It develops the habit of definite daily work. The exercises should be so framed that they will constitute a written recitation upon the principles presented in the text.

Question 5. What proportion of failures may reasonably be expected in physics classes? Eleven say—five per cent or less. Eight say—five to ten per cent. Seven say—ten to fifteen per cent. One says—fifteen to twenty. One says twenty to twenty-five. One expresses the opinion that if more than ten per cent fail that the teacher has failed. This would seem to be a correct statement, considering the selected group of pupils concerned. My classes rarely show as large a proportion as five percent. Those failing are mainly those whose attendance has been irregular.

Question 6. What especial plan or device have you found of especial help in physics teaching?

This question brought out more suggestions than any other. The following are among the more suggestive: "Special experiments for unusual students." "Practical applications to the school plant, to commercial plants, etc." "Report of small committees to special manufacturing plants." "Science visits, blacksmith's shop, etc." "Much class room demonstration." "Newspaper and magazine clippings." "Extra credit for books read." "Show a simple, surprising experiment without comment and ask for an explanation." One uses a new plan almost every year. "Boys and girls apart." "Supervised study and segregation." Allow pupils to give special reports upon topics of interest." Certain of the reports received are conspicuous for insight and grasp of the problems and needs of high school pupils.

Each of us will find a number of helpful hints in the ideas sent in by the twenty-eight teachers. And yet, I suspect that each of these reporting used practically the same topics and principles. Possibly there is considerable truth in a statement given by one teacher, that the method followed is not so important as the personality of the teacher; and yet, other things being equal, the better method will certainly produce more effective results.

Is it possible for us to agree upon a standard or criterion by which a given procedure and its results may be judged? If we are to do so, we must obtain a comprehensive idea of the high school as a whole so that the part to be taken by physics in this total result may be more adequately comprehended.

One of the best recent summaries of the aims of high school teaching is to be found in a text issued last spring by Dean Parker of the School of Education at the University of Chicago. It is entitled "Methods of Teaching in High Schools."

In this text are given the following five aims that are coming to be generally recognized as the proximate, or immediate, ends to be consistently sought in high school:

Health, information, habits, ideals, interests.

Bagley in his book, "The Educative Process" says on page 220, "It is safe to assert then that the *main* aim in education is to instill *Ideals* that will function as judgments, and that in one sense at least, the subject matter of instruction must be totally subservient to this aim.

It is to be concluded then, that the function of the teacher is to inspire as well as to instruct. Doubtless his task would be materially simplified if one or the other of these factors could be eliminated, but the time when this could safely be done is past. New conditions impose new duties and demand a readjustment. In this readjustment, something assuredly will be lost. The task must be so to balance the factors that a net gain will result."

One great ideal in science teaching that should grow into the consciousness of our pupils is that of *suspending judgment until sufficient evidence is in to warrant a conclusion.*

This ideal of the *scientific habit of thought* should be consciously developed by every teacher of physics.

The distinction between *common* and *scientific* knowledge should be so reinforced by repeated illustrations that the inaccuracies of common knowledge

may be looked for as a matter of course and their presence understood as due to conclusions being reached before sufficient evidence has been acquired to warrant them.

The statements made by the teachers in answer to the six questions previously referred to give some of the ideals that they have developed by experience. And what a variety of ideals are there represented, no two alike, and doubtless no two producing the same reaction upon the classes under their influence. This fact doubtless explains the statement of one that a teacher's personality is of more importance than his methods, forgetting that one's personality is largely dependent upon his ideals or perhaps vice versa, and that consciously or unconsciously his ideals affect and determine the methods employed in his classes.

Let us recall the personalities of our own teachers, of the teachers of our early life, particularly of those who have most vitally influenced our lives. Has their influence upon our motives, conduct, plans and aspirations come mainly through the subject matter presented, or through the glimpses we have secured of their ideas and ideals, and of their ways of doing things?

There have been distributed today printed slips containing suggestion upon "How to study." These have been of assistance to the pupils, at Englewood High School, by directing their attention to the conditions that lead most readily to the successful accomplishment of a student's task. I trust that you will feel free to make use of these in your own school in any way that you feel to be helpful.

How To Study

The habits of study formed in school are of as great importance as the subjects mastered; your daily aim should be to learn your lesson in less time, or to learn it better in the same time. The following suggestions, if carefully followed, will help you make your mind an efficient tool.

1. Understand the lesson assignment. Learn to take notes on the suggestions given by the teacher when the lesson is assigned. Take down accurately any references given by the teacher. Should a reference be of special importance, star (*) it so that you may readily find it. Pick out the important topics of the lesson before beginning your study.
2. Provide yourself with the material the lesson requires; have on hand maps, ruler, compass, special paper, or whatever is needed.
3. Do not lose time getting ready for study; sit down and begin to work at once. Concentrate on your work, i. e., put your mind on it and let nothing disturb you. Have the will to learn thoroughly yet without wasting time.
4. Learn to use your textbook. The following devices will be found helpful: index, appendix, footnotes, maps, illustrations, vocabulary, etc. Learn to use your textbook, as it will help you to use other books. Therefore understand the purpose of the devices named above and use them freely.

5. In many kinds of work it is best to go over the lesson quickly, then to go over it again carefully; e. g., before beginning to solve a problem in mathematics read it through and be sure you understand what is to be proved before beginning its solution; in translating a foreign language, read the passage through and see how much you can understand before consulting the vocabulary.
6. Do individual study. Learn to form your own judgments, to work your own problems. Individual study is honest study.
7. Try to put the facts you are learning into practical use if possible. Apply them to present-day conditions. Illustrate them in terms familiar to you.
8. Take an interest in the subjects taught in school. Read the periodical literature concerning these. Talk to your parents about your school work. Discuss with them points that interest you.
9. Review your lessons frequently. If there were points you did not understand, the review will help you to master them.
10. Prepare each lesson every day. The habit of meeting each requirement punctually is of extreme importance. Plan to give each subject a definite time for its preparation.

Parker says, "The school is a complicated, specialized institution, maintained by society to achieve certain specific results." "In any other institution which is as complicated as the school, efficiency depends to a large extent upon careful attention to the details of management. In no other process is it so important to give careful attention to the problems of waste and economy as in education.

"The sources of waste in classroom work have been divided by Professor Bagley into two principal types: the first type includes those where the waste is due to failure to organize properly certain mechanical aspects of classroom activity; to this type he applies the term *routine factors.*

The second type includes those sources of waste which are due to failure to adjust the classroom activities to the constantly varying capacities, interests and responses of the students. To these aspects of school work, Bagley applies the term *judgment factors.*

"The routine factors include those matters that recur in approximately the same form from day to day and which can be advantageously systematized, organized and reduced to mechanical habits.

The judgment factors, on the other hand, are constantly varying, and require of the teacher constant, alert exercise of judgment in order to avoid misdirected time and energy.

The routine factors with which the physics teacher is concerned are:

Starting right the first day.

Seating of students.

Handling of materials.

Attention to physical conditions.

Maintenance of order.

It is of material help for the teacher to have his work so planned that on the first day he can do three things: 1st. Obtain a list of names of the students in his class and of their educational experience. 2nd. To give the class the general plans of the teacher for the course, and 3d. Some definite instruction or information upon the work of the course. This may include a review of past related work or a conversational introduction to the new work, or both.

The *Seating of pupils* in my own classes is done alphabetically, as my class lists are arranged the same way. This plan assists in becoming acquainted with the pupils and in noting absences. A vacant place indicates an absence. This renders unnecessary a roll call. If this saves three minutes of the class time a day, it saves for each class of thirty pupils, ninety pupil minutes per class per day.

There is complaint of much waste of time in laboratory work. Conditions arousing criticism, however, may be prevented or overcome by setting definite tasks, to be completed at a set time, in a specified manner, and expecting the pupils to keep up to the schedule. The pressure of the work, rather than the pressure of the teacher, should develop the habit of getting down to business promptly in order that the experiment may be satisfactorily completed within the alloted time.

The laboratory notes should fall into a definite form as soon as possible. This will result in as much of a saving for the teacher as for the pupil.

Another routine factor of much importance is that of giving *proper attention to the physical conditions* in the class room or laboratory. This involves keeping the room at a proper *temperature,* from 68-72 degrees, F., in securing *sufficient ventilation,* and in providing the right amount of *lighting.*

Habitual attention of these three considerations—temperature, ventilation and lighting—will do much to eliminate distracting conditions about the student. He will be more efficient in his work as physical irritations are eliminated.

The fifth routine factor is the *maintenance* of *order.* If the first four routine conditions are secured there will be little tendency to disorder, especially in subjects that provide definite tasks, of sufficient amount, variety, and interest to keep the attention occupied.

One source of waste of time and energy, is the dictation by the teacher of outlines, syllabi, experiments, etc. These should be prepared with some form of duplicating apparatus, as the mimeograph.

This, properly, should be done by a clerk in the principal's office and in the best managed schools it is so accomplished. If it cannot be done at the principal's office, the work should be attempted by the teacher as it results in much saving of time on the part of pupils.

In arranging proper lighting, note that it should come from one side, the left if possible, or from a single source, to prevent conflicting shadows.

Turning now to the *judgment factors,* concerned with the planning of the work in our subject, one finds this considered by many writers under four heads: The first of these is often stated in the following form:

"The selection of subject matter in relation to varying social needs."

In the replies to the questions read earlier in this paper, it is observed that many teachers are using their own judgment, in the selection of topics that require emphasizing on account of local conditions and interests. This leads to a second *judgment factor,* that of the *intensive treatment* of *fewer topics.*

One should lay out a program at the beginning of the year, assigning to each portion of the subject its proper amount of time, not forgetting to allow for reviews and examinations. This program once determined on should be followed closely. It will be necessary to abridge the work in some subjects. One is forced to the intensive study of fewer topics in carrying out the program above suggested.

This matter is dependent upon a third judgment factor, that of *The Determination* of *Relative Values.* One must carefully consider the importance of the various topics to the individuals in his classes. I find that segregation simplifies this for me, since the individuals in my girls' classes have a different experience and outlook from those containing boys.

Attention should be called to the many opportunities in the home for illustrating physical facts and principles. This leads to,—

The fourth judgment factor, the *Organization* in *Terms* of the *Learner instead* of in *terms* of the *Subject itself.*

Our work to be most successful must be determined by the needs, capacities and interests of the taught.

In conclusion may I point out that the highly effective physics teacher possesses understanding to many things. He knows the general purposes of the high school in our system of education; his grasp of the routine and judgment factors that make for efficiency in class management is clear and comprehensive. He knows that the most permanent of the results of his teaching are the ideals that are developed, purposely and yet perhaps incidentally, with the progress of the course of instruction. This, with the indispensable knowledge of the subject matter, its relationships, its applications in uncounted ways in our complex civilization, give the physics teacher, yes, the science teacher, a power for producing permanent results of the utmost value to the individual, to the school, and to the community.

Paper by Dr. David Klein on

The High School Teacher as a Factor in Enforcing the Food Laws

During the past ten years the demand for a purer, more honest food supply has become firmly implanted in this country. It has found expression in a National Food and Drugs Act, and in State laws throughout the entire nation. The mere fact that such legislation has been enacted, implies the underlying conception that the manufacture and distribution of food must

be supervised or controlled by representatives of the people. Certainly, it is the business of the Federal Government and of the several state governments to secure for the people a wholesome food supply, and an honest one. In theory, at any rate, control and inspection of these agencies seem adequate provisions for safeguarding the food supply. Yet in practice the scheme breaks down because of its magnitude and complexity, compared with the small number of control officials. Omitting from the discussion Federal control, I would invite your attention to the situation in Illinois. The law provides for twelve inspectors, whose duty it shall be to enforce the food and dairy laws, the oleomargarine, the sanitary law, and the immature veal law. Twelve inspectors for a population approximating 6,000,000! Imagine yourself one of these inspectors, in charge of a district containing 500,000 inhabitants, scattered in groups ranging from 50,000 or 60,000 down to 400 or 500, in an area included in five or six counties. Your duties would be to inspect every meat market, grocery store, bakery, restaurant, ice cream parlor, in short, every establishment where food is either manufactured or sold; to take samples of any and all foods suspected of not complying with the law. A few months' experience would soon convince you that the job was too big for one person.

Food inspection and control to be efficient must be continuous, not sporadic. The occasional visit of a state food inspector may cause marked improvement in local conditions. But it is not long after that, before there is a return to the conditions previously objectionable. It is a notorious trait of human nature that custom or habit tends to make us careless or at least less alert to conditions that need correction. Thus the manufacturer or distributor of food may lose sight of the fact that the commodity dealt in is intended for human consumption. The daily handling of food tends to make the seller forgetful of the requirements involved in the sanitary production and distribution of food. Against this "intimacy that breeds contempt" there is one restraining force—efficient local inspection. And it is just in this respect that so many of the cities of Illinois are lacking. We are not so much interested at this time in the question "Why Illinois cities are so inadequately provided with food inspection officers." We shall be more concerned with the present conditions and what can be done to improve them.

Of recent years, much has been said and written regarding the function of the school as a social center. There is the idea that the school house can function in more capacities than that of sheltering the young during school hours. I would now like to amplify that conception to include not only the school house but also the teacher. If the community comes to the school house, why not also have the teacher go to the community? Why not have the teacher extend his activities from the school room to the community, where the doctrines taught in the former may be actually put into practice in the latter? And for the teacher in chemistry I would offer this suggestion—that he take an active interest in local food control and inspection, and analysis. There is nothing in this suggestion that is startlingly new. In fact, during the past few years, more and more emphasis has been placed upon the practical side of chemistry in high school instruction; always there is

the endeavor to replace the classical experiments by others, which shall bring home to the student the every day, universal usefulness of chemistry. Experiments with food substances have found their way into the elementary chemistry curriculum. In fact several systems are notorious for the extensive and early use of food stuffs as experimental material in beginning chemistry. True, students become intensely interested in testing a pop for carbon dioxide or saccharin, or coal tar dye, albeit they know nothing of the chemistry of the carbon dioxide or the saccharine or of the theory of double dyeing. Such experiments may have value, but they should not be given to students as part of a course of chemistry. Ten years of instructing in beginning chemistry have convinced me that the highest value of such a course is lost, when the attempt is made to give the students experiments which interest them, but which have doubtful disciplinary merit. The true function of elementary experimental science is not to fit the students with isolated facts, but to train him in the method of science, to give him the proper mental discipline which results from careful observation of fact and reasonable deductions therefrom.

My purpose in dwelling upon the teaching of elementary chemistry at such length is to prevent a misinterpretation of the plan which I shall advocate. In the junior high schools that offer work comparable with quantitative analysis in the universities, there might well be incorporated some work in food analysis. With advanced students, or those who wish to work after school hours, there is good reason for interesting them in food chemistry. But in addressing you on the subject of cooperation, I have in mind not your students, but yourself. I want to point out various ways in which you can be of great value to the community, by acting as an unofficial branch laboratory of the State Food Department. Between class hours, after school hours, on Saturdays and at other times, it is possible for you to conduct analysis which will be of real value, in improving food conditions.

I shall now point out a few of the lines of work that may be pursued.

First and foremost, there is the milk supply. No other food is so important to infant welfare; no food is so economical in adult nutrition as milk. Yet no other food is so easily rendered harmful or is so subject to decomposition. Constant supervision is the only means of safeguarding the milk supply. The obvious adulterations are watering, skimming, preserving. These are usually simple chemical determinations, which are within the compass of any high school equipment. Dirty milk is also easily detectable, provided careful filtration or clarification have not been used. Temperature is a highly important factor in wholesome milk. It is simple to obtain the temperature of milk as delivered in bottle or bulk, as received by cream stations, or as standing on railroad or interurban platforms. Visits to the farms at milking time are highly illuminating. Bacterial analysis is ordinarily not within the scope of high school equipment. If the other information is obtained, and a copy of it transmitted to the Food Department's office, it will place in our hands much valuable material on the localities that need immediate attention.

In connection with milk, mention should also be made of the other dairy products. It is a simple matter to determine whether a sample is butter or oleomargarine. It is not much more difficult to find out whether the sample of butter exceeds the limit of moisture, curd and salt. There is now a state standard for ice cream. The analysis for milk fat is quite within the possibilities of a high school laboratory.

In another direction, you can be most helpful to the community. We are urging the farmers and other apple growers, to utilize the excess of crop in the production of home-made cider vinegar. A bulletin setting forth in detail the necessary steps in the process, together with a simpler exposition of the theory involved has been widely circulated throughout the state. The point which will give the farmer the greatest annoyance is a method of telling when the cider has been fermented sufficiently to make a legal vinegar. Assuming that the cider has not been adulterated, it is certain to make a legal vinegar if the acidity is over 4%. The determination of acidity is so simple that this service can be performed in any high school laboratory. By letting it be known that you are prepared to make such a test, either for pay or otherwise, as you see fit, you would be helping us and the state in a very great degree.

You are probably aware that many butchers are in the habit of preserving Hamburger steak with sodium acid sulphite. Heretofore, the Food Department has permitted the use of this substance, in limited quantity, provided there was a prominent declaration that the sodium sulphite was used. Many butchers have evaded the rule by not declaring the use of the preservative. The detection and estimation of sulphur dioxide in meat products are not difficult matters.

Frequently an imitation lard is sold for the genuine article. In some instances, detection of the adulteration is a matter of great difficulty,—but when the substance contains cottonseed oil, the presence of the oil is easily established. In this same connection, the sale of cotton seed oil for olive oil, or salad oil is not uncommon. As in the case of imitation lard, the presence of cotton seed oil is readily determined.

During the past year, the Food Department has been actively engaged in the improving of the egg supply, but efforts will be increased during the coming year. Thanks to an amendment to the food law, it is possible for us to take action whenever eggs of specific characteristics are sold or offered for sale. By the method of candling, eggs of the prohibited classes are easily distinguished. In this matter you can be of service, in two ways, first, by assisting us in teaching the farmers and local egg handlers how to candle eggs, and secondly, by informing us of any one who violates the law or our rules and regulations for enforcing it.

There are other foods that might well be included in the above list. I have tried to indicate various lines of work, rather than attempt a complete list. There are other ways in which you can be of help. It is our duty to enforce the sanitary law, which has for its purpose the proper care in the handling, distributing and displaying of foods. You ought to become familiar

with that law, and to note flagrant violations in your town. If these are reported to our office, they will be given attention so soon as we can get an inspector into that territory.

A pure and honest food supply can never be secured until public sentiment is actively interested in the subject. To be sure, there is an unexpressed desire on the part of a large number for wholesome foods, handled in a clean manner. No law can be successfully enforced unless public sentiment is in favor of it. We are therefore trying to arouse a more active, definite interest in food questions. Through bulletins, lectures, press notices, we are trying to interest the people in our work. You can do much to help us. An occasional lecture to your classes on food laws or food production will stimulate interest. In fact, a course could be given either in school hours, or in the evenings, very elementary in character, on the sources and values of foods, to which any one would be admitted. The aid of the local newspapers could be obtained, for the publication of items on the food law, food values, or food violations.

I have thus broadly sketched for you a plan of co-operative work whereby the food supply of the state would be better supervised. To encourage this plan, the State Food Department will be willing to go more than half way. I can promise that methods of analyses, discussion and interpretation of results will be sent to all who desire the same. Visits to our laboratory in Chicago are to be encouraged. Information on food questions will be supplied, upon request, in so far as we possess the desired knowledge. The defraying of the expenses of buying samples and chemicals cannot be borne by the Food Department at this time. This point is one to which I have given much thought, but I cannot see how the Food Department can expend its appropriation for this purpose. But other sources of revenue suggest themselves. In some cities it might be possible to obtain a small sum from the governing body. The Woman's Clubs might be induced to donate for the purpose; or the Chamber of Commerce, or the Business Men's Association. The school board would undoubtedly grant the use of the laboratories and such apparatus and chemicals as would be required. As a matter of fact, no great amount of money is needed. To each of you, is left the task of working out the local details.

In urging the serious consideration of the plan suggested in this paper, I would place among the important advantages, the personal value that such work would have for you. In your class room, you have held before your students, the intense practical side of chemistry. You have tried to impress upon them, that chemistry is involved in almost every act of this busy, booming world. You have sought to impress this the more on your students by making the laboratory work "practical." Yet I am sure that often the thought must have come to you, that as teachers of chemistry you are almost completely out of touch with that practical side that you so strongly impress on your pupils. This plan will do much to supply that deficiency. There will come into your teaching an added interest, derived from these excursions into practical chemistry.

Social Science Section

Meeting of Social Science Section called to order at 9 o'clock in Room 308, Lincoln Hall, Mr. Russell M. Story presiding. R. D. Chadwick, of Emerson School, Gary, Indiana, presented a paper on "Social Value as a Motive in History Work." An abstract of this paper follows:

One of my ablest teachers in college often said before our psychology class "the end of will is getting it done." This is pertinent when we think of our aims and purposes in teaching history; our purposes are of no effect, our aims fall short, if the work is not done by the pupils.

These purposes and aims whether popular or theoretical, medieval or contemporary, will be realized if the pupil has a motive power which masters the content of the course and does the tasks assigned. Providing, of course, that the content and the tasks have some real relation to "the welfare of the individual and the good of society."

One of the important items in a teacher's equipment is to acquire aims and purposes for himself, regarding his manner and method, and regarding the results he hopes to realize.

I conceive of purposes as the blue-print plans for the structure we expect to build. They are valueless except for our own discipline, unless the structure is erected. Without purposes and aims we build without a plan. But we must build. We must have our aims and purposes, and the pupil must have his motive for doing the work, in order that the purposes are realized. The pupil must have a motive, as surely as an automobile must have a motor. The teacher's purpose and aim sets the goal, but the pupil does not arrive unless he has a motive which supplies the motive-power to make the journey to the goal. It is my purpose in this paper to point out a *genuine motive,* and show its value immediately to the pupil and to his society, and later to adult society. In fact it is demonstratable that it is in not a few cases of immediate value to adult society.

We have found that if the work can be made of social value, that the interest of the pupil is enlarged, and the greater the interest, the greater is the incentive to work and do better work. If a pupil is led to see that his work will be of value, not only to himself, but to other pupils, or that his work will be of value to his parents, and to other men and women that he knows, then his desire to do good work is kindled. We are doing this in history, civics and geography.

There were two things which attracted my notice when I went to the Emerson School in January, 1912. The first was the system used by my predecessor of having outside readings assigned by the hundred pages for the semester. This procedure is encouraged by some state boards of education in their state courses of study. The second was the beautiful maps and pictures which had been drawn by students, and neatly pasted in a large black book. The procedure in regard to the pages of reading was something as

follows: The student read a certain number of pages and then handed in a statement which showed the title of the book, the author, and the number of pages read. These were filed away under the student's name alphabetically. When the semester ended the number of pages read were added together, and if they fulfilled the requirements, and all other work being satisfactory, credit was given. It appeared to me that it was the teacher's purpose to get the pupils to use books, and the pupil did so. As far as I know it was a matter entirely between the pupil and the teacher.

The book containing the excellent maps and pictures was placed on a shelf in the cabinet near the door, and when visitors entered they were encouraged to inspect the book. No doubt the pupils who had work upon display were greatly gratified. At the present time if you should visit the Emerson School you will find maps and pictures and charts and diagrams much in evidence. They are in the halls and upon its walls, in the history room and upon its walls. I do not think that the general appearance is quite as neat and trim as it was before 1912. We have four weeks during the year set aside for visitors, and this material is in evidence for the remaining thirty-six weeks (and all summer) as well as during our four weeks of hospitality, so that there is another reason for its display, rather than for the attempt to impress the guests.

I remember one day in the 11th year Modern History class that we were trying to get a concrete impression of the appearance of Europe at the height of Napoleon's Power. Our textbook had it not. The thought occured to me, why not have a map made to show what we wanted to know. This led to a search for ways and means. A girl and a boy volunteered to try and make a map large enough to be used in the classroom. I bought several yards of sign cloth at eight cents a yard, and the work began. On account of the small desks, they had to work outside the room. This fact led me to draw up a plan for a table which would enable us to carry on such work in the room under supervision. The map was rather crude, the colors were brilliant to an extraordinary degree, (and they were fast colors), but it gave the impression that we desired, and it is still used when we need it. When it is not in use in the recitation we usually have it out in the hall, for perhaps somebody else in the school will get the idea that it expresses. It is interesting to compare this map with a contemporary map. It forms a sharp contrast, and a century's change in political geography can be pointed out and be made clear. This is surely sound pedagogy. Adults who come to the evening classes also examine maps and charts when hung in the halls, sometimes quite intently.

What was the effect upon the boy and girl who made the map? They were enthusiastic and when we came to the years of 1870 and 1871 they volunteered to make a map showing the extent of the German Empire since 1871. The map was made, and it too belongs to our now long list of pupil-made maps. In that same year another student made a map showing the "Unification of Italy" to illustrate the process by which a peninsula became a state. The underlying motive is that of doing a piece of work that is of primary

value to the class, but also of educational value to other members of the student's society, and in addition, of value to a certain degree to adult society. A very large by-motive with some pupils, is that of doing a tangible piece of work. So much of our work is intangible, and therefore it is hard for the student to understand its value.

Ask him to do work that is of tangible value to his fellows,—he understands you and he is enthusiastic in doing in. The *Social Motive Gets the Work Done.* That tangibleness is a by-motive, is proven by the fact that a pupil will always choose to do ten hours work upon a large map of use in the class-room, rather than expend the same time and effort upon a map to place in his note-book or a visitor's book.

In adult society the real motive comes from *Social Service.* Suppose my aim and purpose in teaching history is *the moral aim.* Have I not, to a measure, at least, reached my goal? I believe I have approached it. What was the motive power? It was *social value.* The highest rule that we can have in our moral life is the golden rule. If the adult makes the moving force in his life a personal ambition, "an opportunity to display superiority," is it not because he studied in school with this motive?

"*Live-and-help*-live is the rule of progressive democratic faith, the old rule was 'live-and-let-live,'" says Croly. (Progressive Democracy, Macmillan, 1914, p. 426). We do not even have the old rule lived up to many times in our modern life, in both high and low places. If we are ever to realize the rule of "live-and-help-live" it will be by training our pupils to live-and-help-live in their student days. Life in school must be recognized as a *real life* to the student. Therefore unless our teaching loses all effect in later years, the development of a real social motive in the pupil is bound to function later.

Many pupils leave school because they do not see the connection between the school studies and life, the real, active, pulsing, present life, as well as life in the near future. Again, they are often compelled to leave school to help support a large family, a widowed mother, and the like. The motive for leaving in both cases, whether voluntary or involuntary, is the motive of doing something of social value.

If we are scientific historians or history teachers we will still go on without appealing to this vital motive, this motive that gets things done, and that will function later. At least I am convinced, if Dr. G. Stanley Hall is correct, and he speaks as "one having authority," for he says (Educational Problems, II, p. 281.) "The scientific historian is so objective that he has little interest in motives. His motive is 'history for history's sake.'" Perhaps this is the reason so many college and university professors of history allow their students to take three and four years of history and political science without in the least appealing to this motive, viz., they are scientific historians.

This leads me to tell you briefly that the social motive may be invoked in teaching a child the important civic lessons connected with current politics. We have a school election each year. All children from the eighth grade on through the high school enter into the campaign; they form parties, nominate candidates, advocate independent voting, advise how to cast a ballot

without technical error, urge all to register and then to be sure to vote. They make speeches in the auditorium, giving the history of parties, discussing the functions of parties, the evolution of the ballot, the merits of a short ballot, and commission government; they eulogise the merits of their candidates and their platforms. They labor to win the election, but they will not countenance anything that looks like fraud.

Is this just activity without purpose and without motive? Surely it is not. I have a 12th year class with about thirty-five students in it. We have been using as our outline Garner's "Government in the United States," which is the adopted Indiana text-book in Civics. For two weeks we have been reciting and discussing the ballots which we have in our collection of illustrative materials, listening to reports from nearly every available book in the Gary Public Library that in any way deals with campaigns, elections and nominations. What for? To increase our mental storage batteries for future voting activity and other citizen participation in politics? No indeed! It is to get ready to have our Student Council Election sometime before the holidays. Will it be of value when they are adults? But why ask such a question? They are studying about elections in order that the school election may be carried out as nearly according to the federal and Indiana laws as possible. Perhaps, in the background of their consciousness, they know it will be of value later on. But now this class is working in order that the product of their labor may be of use to the school citizens. This is of social value. It is a dynamic power in getting the civics work done, and their very reason for working should function later in willingness to serve the community in similar service.

One boy before prepared a paper upon "Indiana Election Laws" and was elected by the class as chairman of a committee of three to summarize the Election Laws of Indiana for publication in our "Voter's Blue Book" which we hope to have off of the school press before the election. For several years we have annually studied how to vote intelligently. This is what we think the voter ought to do in order to vote intelligently. He must read the platforms of the parties, and where there are no platforms he must hear the policies of the candidates stated, he must study the record of the candidate if he has ever held a public office or is a candidate for re-election; if he is a new candidate his fitness in every way should be studied. Let me say right here that the boys and girls believe in the "short ballot," and I hope that belief becomes a conviction and functions in their adult life.

I think that the special reports which are prepared in the Branch Library and the Main Public Library, are the most useful tasks of social value in my classes. My injunction, often repeated, is "get the first sentence." If the listening class gets the first sentence they will usually be attentive. The quality of the delivery is improved by the injunction also. The students also know that the most effective reports will be used in the auditorium when the history department is expected to contribute a program.

May I return to the subject of elections just a moment? In November, 1914, when the county and congressional campaign was being held, the Student

Council campaign was on also. The Council decided that if it was helpful to vote intelligently in our election to hear the "flag-bearers of the contending parties upon the auditorium platform, that it would be highly valuable for their parents (the male parent) if we could have a non-partisan meeting, and hear a representative from each of the contending parties. Arrangements were made with the political committees of the parties, they agreed to be represented by a speaker. The speaker was to have thirty minutes (this is really too short a time) to talk constructively upon the question: Why Vote the Democratic Ticket? Why Vote the Republican Ticket? Why Vote the Socialist Ticket? and Why Vote the Progressive Ticket? (I think I have given them in the order in which they appeared.) The newspapers announced the meeting for us, and we placed placards in the store windows, and sent small bills home with each child.

I will quote from a Gary paper which appeared the evening following the election: "If anybody has not the issues of the four parties in the field firmly and clearly fixed in his mind as the election approaches, it is his fault for last night at the Emerson School, the claims of the four parties were presented side by side so that all might choose intelligently one of them. The auditorium was packed and it is estimated that nearly one thousand voters listened eagerly to all of the exponents of the four parties."

Now, this was a piece of work of value to the community which was planned and successfully carried through by the representatives of the Emerson School electorate. The motive that animated these boys and girls was that the job was worth the time and effort. It was a social motive operating throughout.

Time forbids a continuation of the enumeration and discussion of the various types of work which may be made to appeal to the social-value motive. So I will enumerate a few more that I have found workable: the Historical Pageant, building of models, bulletin boards, sand-table, maps, relics loaned for exhibition in our hall cabinets, contribution of pictures, cartoons, and maps, the debate and the debating club, bulletins published in the school press, and articles printed in the school paper and the public press.

It is possible to make nearly all kinds of history work of social value, as far as the method of the recitation is concerned, at least to a limited degree. For example, in a class of over thirty taking Greek history during the first semester last year, the following social contributions were made: eleven biographical reports; twenty reports upon science, art, life and manners, battles, and kindred subjects; and six special wall or relief maps. These were then grouped into auditorium programs, and made six programs of varying interest according to the ability in speaking possessed by the individual students.

The ancient history class has for its purpose: "to improve its members as American citizens by a study of the experiences of the ancient people." This class after some classroom turbulence, formed a voluntary society which is duly opened and conducted by the president, while the instructor lingers

in a leisurely fashion outside. I know of no more admirable reason for historical study than this phrase the natural expression of the Gary child who wrote the constitution for this class.

Dr. Bobbit in his "School Survey of the Public Schools of South Bend, Indiana" says concerning the content of history: *"History is an even better instrument than geography for revealing the nature and relations of all vocational groups.* It reveals the factors involved in any industrial organization by showing how they began, and how they have come to be what they are."

As I have pondered this statement of Dr. Bobbit in connection with my own Gary work, I have thought that here we have a city to be ten years old in 1916. Its growth is due to the railroad, the steamship, the steel industry (and its allied industries), mining of coal and iron, and quarrying. If I can so plan a course for my students that will trace these industries through, first the time and conditions before some of them existed, of the time of their infancy, up to the present, that I will have a course that will appeal to the student because of its UTILITY TO THE INDIVIDUAL STUDENT, and because of the *opportunities for making it of social value.* In the first place, the adopted text-book in American history in Indiana is James and Sanford's. There would need to be many special reports before the class, to elaborate the "Story of Steel." Special reports are of social value, because they not only benefit the student giving the report but the whole class as well. Second, they have additional social value if they are given in the auditorium before students who may not take the course, or are not taking history at this specific time, and they may give information to such and in some cases arouse an interest in the subject that will result in some independent and private reading. Third, again some of this interest may get into the homes of the students. In fact, I know that it will get into many homes. I often tell the class or a specific student to ask mother or father or some other member of the family what they think of some specific topic which we are studying. I often have a boy or girl say: "My father thinks this or that," or "Father became greatly interested in my special report." One girl said: "I had the whole family helping to find information on my subject Sunday afternoon." Her subject was "The Mosaic Code," which had been assigned to be given Monday. I knew most families would not object to studying the Bible on Sunday. Fourth, in the fourth instance, such a study may be made of value to the community in many ways. We may publish a bulletin entitled "Steel," or "The Story of Steel," or "Why Gary was Built." In the latter you see we could have a brief sketch of railroad development, steamboat transportation, mining and quarrying, as well as steel. Parents may be invited to hear papers read before a meeting in the school auditorium.

This method might appeal also to the teacher in a rural community, or in a community that does not depend upon one industry. One of the things that especially appeals to the boy on the farm is the purchase of some fine new labor-saving piece of farm machinery. Here is an interest that links up quickly to the study of the development of the "reaper" and the many other

wonderful machines that are now in use before the very eyes of the boy or girl on the farm. How many rural teachers are grasping the idea that the "plow" has a history?

In such a study with "steel" as the basis, or "improved farm machinery" in the latter case, the political and social phases of history may find sufficient place and emphasis. Biographies of statesmen and soldiers still have a place. Maps showing our territorial development are not amiss. But certain vital subjects that teach a child to live now, and not simply to dream, will take a place of definite value in the history courses. Most of our political and military heroes supply food for dreaming only, in my estimation. The rank and file of our boys and girls will rapidly forget about them and they should, because vital things will crowd in on their minds for solution.

In conclusion my talk may be summarized:

(1) Teachers should define their aims and purposes;

(2) The social value motive should be the pupils' motor to get the work done;

(3) The content should be socially valuable.

Mr. H. M. Thrasher, Hutsonville, opened the discussion. He spoke, in substance, as follows:

There is no duty more vital to the American public school system than the production of intelligent citizenship.

There is no subject taught in modern schools better calculated to assist in the development of intelligent citizens than history. Wider knowledge is provided in history than in any other study. The past with all its mystery and charm, its records of centuries of human toil and accomplishment,—all is a closed book to him who knows no history. Literature cannot be intelligently studied unless the historical background lends color and tone to the written page. The daily press may record the struggle of Servia against her invaders, or the crowning of an emperor in China, but it is poorly digested unless we know something of these nations' past. It is this history-knowledge which saves us, as Mr. Bryce has said, from drawing dangerous conclusions.

The true history teacher must teach not only the facts of history in all their geographic, economic, and social phases, but he must show also that such knowledge has social value. A long step is taken toward the making of an intelligent citizen, when we can prove to our boys and girls that this work will not only be of personal value, but in an ever-widening circle of influence will affect their family, their friends, their community, their state, and finally the nation. It is a trite saying that man is a social animal. However far we may have advanced along the scale of civilization is due partly, at least, to this valuable trait. The feeling of interdependence has resulted in the clan, the tribe, the nation. Throughout the centuries then, men have learned the value of working together in harmony. As long as there were allied interests, common ideals, and a homogeneous society or citizenship, nations have lived and flourished. When alien interests, hostile institutions, or

clashing ideals have formed an entering wedge,—that nation as a people has fallen. This social feeling of interdependence present in the heart of every boy should be used as an added incentive toward better history work.

We have just heard many excellent plans for showing the social value of history in operation in the Gary schools. Some of these plans,—perhaps all of them—have been used by teachers present here today. The sand table to illustrate the topography of some historic spot, maps and charts of the pupils' construction, the publishing of the pupils' articles in the daily paper, history games, the study of current magazines, the preservation of clippings on contemporaneous history, the student council and the school election—all these help to show the pupil the social value of his work. Doubtless, the history room should be a laboratory where our pupils can work and plan. The value of the stereopticon cannot be overestimated, not only in the imparting of concrete history knowledge, but in stimulating independent study without the repeated direction of the teacher. We have been using a stereopticon in our own school for several years and find that it has resulted in a much higher type of history work. All such plans, not as ends in themselves, but as means toward an end, assist in the intelligent pursuit of history.

To me there is no field of history so full of social value to American youth, or better adapted for the creation of intelligent citizenship than that of American History. The Indian with his life full of tragedy and romance, rivalry and love, is transplanted by another and a stronger race. The pioneer with his rifle and ax clears the way for a national development. Cities spring up over night where but yesterday had been the red man's hunting-ground. The years pass and this people arise in a great revolution against political bondage. Now comes the greatest of all problems—the problem of self-government. Onward and upward the people toil. Almost a hundred years elapse. The nation waxes strong before the eyes of the world,—but dissensions enter and another war blackens the face of the land. From this war the nation rises with new hopes. In less than half a century it commands the admiration and envy of the world because of its commercial, military, and agricultural industries. Thus we may see our country today. It is the story that should fascinate every boy and girl in the public school. History, especially national history, should teach true patriotism. When our history teachers, with their heart in the task, drive home the truth of the social value of their subject,—value to the home, to the state, to the nation, our schools will produce an intelligent and a patriotic citizenship.

General Discussion:

Mr. Chadwick was asked how he made student reports successful. He replied that he only assigned topics that had come up in class discussion and that the students brought reports to him for his examination and criticism.

Mr. Parker, of Quincy, told of his method. He gave only matters of current interest to be looked up in magazines. Outlines were

prepared and criticized until the desired results were obtained. These reports were made orally from brief notes followed by a general class discussion which provided notes on the important points for the notebooks.

In reply to a question Mr. Chadwick stated that history equipment at Gary did not prove inexpensive because the pupils made most of the maps with the expense limited to the raw materials.

Prof. E. B. Greene interrupted the regular program to call attention to the value to the teachers of history of *The History Teacher's Magazine*. He pointed out that there were more subscribers from Illinois than from any other state except New York, yet there were many other persons whose names ought to be added to the Illinois list.

The next paper was by Miss Nelle Perry, Oblong, on "Aims and Methods in the Teaching of History."

The teaching of history has two aims; first, mental discipline and, second, culture or knowledge for knowledge's sake.

I believe the purpose of teaching is not to crowd as much information as possible into the student's mind, but to give him a general knowledge of history material plus the training in its organization which will enable him to find and use that material when he needs it. We educate ourselves not that we may use certain knowledge, as Latin, Greek, geometry, etc. in the outside world, but that the mental discipline we have gained may enable us to solve new problems more quickly than can our uneducated competitor. Therefore, any subject which we teach should have mental discipline as a frame work, consciously underlying it.

Each year's work in the high school marks one rung in the ladder of the child's mental development. There is a distinct advance in mental strength between the Freshman and the Sophomore classes that the latter have a much stronger grasp of essentials and that their powers of organization are better. This difference is even more noticeable between the Sophomore and Junior years. The Juniors seem to take a keener interest in their studies, to possess a greater ability to grasp essentials, and to feel more keenly their opportunities for development. Since we have this unconscious development of the student, I believe we should further it by definitely planning some distinct advance each year in mental disciplinary requirements.

It is this building up of mental discipline through the three years history work of High School that I wish to discuss. First, I want to describe the plans I am using in my Ancient History classes and how I follow up and develop these in Junior and Senior history.

My first aim is to teach the child *how to study history* and to inculcate habits of study during the first few months which will be the foundation for his future history work.

I believe there is no better way to put a class on their *mettle* than to tell them you have something difficult to do and explain how and why it will benefit them to do it. The vocal teacher who tells a pupil to sing "Was" for ten minutes by the clock each day gets half-hearted obedience until the pupil understands she is working for flexibility of throat. And the teacher of History secures intelligent co-operation with *her* plans by explaining to the class in History on the first day of the session what she expects that class to accomplish during the year.

I explained to my class starting High School history the cultural value of the subject. I told them that valuable as it was to know history, in a year or two they would forget a great deal of it, because the mind, constantly receiving impressions could not retain all of them; that the lasting benefit was the mental discipline, which meant the ability to learn things more quickly, to pick out the essential thot in a paragraph, to organize material under especial heads, etc.; that this was training which, if applied to other things, could be used every day of their lives; and that at the end of the year I expected them to be able to do the following things:

1. To know the material studied thoroughly enough to be able to organize it under general topics.

2. To grasp and organize quickly the essential facts in a paragraph or topic.

3. To give a three-minute daily recitation, using good English, and a five-minute recitation on outside reports using a brief outline.

The two devices upon which I base the greater part of the mental discipline for the first year's work are the outlines of the text or collateral reading, and the recitation. My pupils are instructed to briefly outline the text, placing details under their general heads. This is done at first in ink in the note book until the system is throughly learned and becomes more or less a habit. I outline with them the first few days and have the outlines handed in each day for the first week, helping those who feel that to have an outline they must copy the whole book. After this I correct the work only at the month's end. Unconsciously the pupil learns to reason inductively; this sifting of material secures a training in organization, and an initiative on the part of the pupil in digging out facts for himself.

My outline work and recitation plans are closely connected. We are using a text in Ancient History which is divided into topics of two or three pages in length, under such heads as "Law and Morality in the Orient," "Money and Banking," "Assyrian Architecture," etc. These are subdivided into paragraphs. *The unit for the pupil's recitation is the topic as a whole.* The pupil comes to the front of the class, and with the aid of this brief outline made in his study period, he gives a two to three-minute recitation, using good English and standing in good position.

By the end of the first month they had the system well in hand. Then I told them they could keep an outline in the note book or not, just as they pleased; but that our recitation system would be the same. I had tried to make the outline of such practical benefit that the pupil would find it such a real help in preparing his lesson that he would not do without it. In most cases I

succeeded. The students who did not, found they could master the topic without the outline and of course this is the ideal state of affairs. I then filled the place of the work of the outline by assigning collateral reading.

To be of value a system must show results. As a result of this system I do not have pupils who habitually say, "I don't know." It seems to give them a feeling of mastery to conquer an unusually stubborn topic. This system also aids the pupil in organizing his material; it gives him ease in talking before the class; it promotes the use of good English; it secures better class attention to the student reciting; it gives him a broader view of the topic as a whole; and enables him to think in wholes rather than in isolated paragraphs.

My third piece of frame work in mental discipline is the note book. Besides maps, the note book consists of three varieties of work: First, class notes, from dictated material in class. I want them to acquire the ability to grasp the essential thought in lecture notes and write it down. Secondly, the charts and diagrams made independently or in class. Thirdly, about two topics a week on material not given in the text, and which I deem essential. Most of these reports are on source material and in this way I attempt to direct the attention of the pupil to the significant idea back of his concrete source of material. These purposes go back to the problem and practice of organizing material; with these aims the note book is merely a written device to secure organization.

My fourth, and last, variety of mental discipline is interpretation. Historical interpretation is the attempt to estimate the significance of the situation back of any specific event. The significance of Marathon was not the military prowess of the Greeks; but that Europe, for the time being, was saved from the Oriental Civilization. The siege of Jerusalem by Sennacherib is important to us because Isaiah saw in the coming of the Assyrians the scourge of God for the sins of the people, and we have the beginning of the conception of Jehovah as a world God. I believe interpretation should be required from the very first year of High School, and that the principles of interpretation should be explained to High School students.

So far I have laid the foundation for three phases of mental development to be carried out during the three years; the recitation, organization as worked out in the outline and in connection with the note book, and interpretation.

In the Junior and Senior years there should be developed the ability to give five minutes daily recitation with the aid of a skeleton outline and outside reports of fifteen minutes in length. I use many outside reports all through the three years. The note book work of the last two years should give more and more difficult problems in longer themes and organization of material culminating in the formal term paper of the Senior year. By the Senior year the student should be able to do most of his own interpretation, assisted by the teacher when necessary. The whole aim of this mental discipline is to make the student as independent of the teacher as possible and to develop the spirit of selfreliance and initiative.

History can only accomplish its highest results by inspiring in its readers a love for the subject. The teacher should give such vision of fascinating reading that the student will be stimulated to read for himself. I consider

collateral reading indispensable from the view point of both mental discipline and cultural development. My list of assigned readings include parallel accounts, especial accounts of periods, illustrated articles in the *National Geographic Magazine* and other periodicals, poems, stories, novels, biography, etc., with so much required source material.

Twenty pages per week is the minimum for the Sophomores and forty pages for the Seniors. The only report required is the author, title of the book and pages read. My Seniors hand in an average of about sixty pages a week, some reports running as high as one hundred and thirty pages a week. The Sophomores average is running high just now for they have been having a three days' Myth-telling contest.

Real interest and enthusiasm for history is created for the student by the reconstruction of the emotion, thought and principles, which are back of a nation's acts until they live before the student's eyes. Technically, we call the methods for such reconstruction of the life of a period devices for visualization. This requires first of all a thoroughly prepared and enthusiastic teacher. There is nothing which will take the place of preparation, just as there is nothing that takes the place of enthusiasm. I find the parts of history I like best my students like best. If I do not care especially to teach a certain period I find the same falling off in their interest. Through the teacher the pulse of class interest beats.

Illustrative material is a great aid to the teacher in making the past real. We have made a collection of a large number of pictures useful in this connection. The pictures in the text book also, when well explained, open up new channels of interest. Just now my Sophomores are bringing me all the pictures they can find of Greek scenery, sculpture, architecture, etc., and we are intending to mount them in exhibit form. We will use these for class note book work as the material for short papers on the different card heads. We also have a lantern with a number of Ancient History slides which are very valuable in giving the setting of the countries we study.

My pet device for visualization is the map lesson. Before starting to study the history of any country a knowledge of its geography and of its physiography is essential; also a knowledge of its products, its people, and their occupations. In studying Greece and the Aegean I practiced drawing the map until I could draw it from memory; decided on the places whose location I considered essential for the study of Greek history; then looked up the myths connected with them; and with a goodly supply of pictures I was ready for the recitation. The pupils, with pencil and paper, followed me as I drew the map, and located the places as I did. After two days foundation work a quiz period showed that the class could locate fifty places and draw in the Greek states roughly with no grade below eighty. The lessons gave me the opportunity to point out before we started the regular work the chief cities of Greece and the part they played in history. As a result of these three days work they had not only the geography and physiography of Greece and the Aegean, but they had also visualized it to some extent.

Parallel columns showing the parallel development of different countries aid in visualization. I make the most use of parallel columns in Modern History to keep clear the intricate political course of events of the European Nations. I also use them in Ancient History to keep clear and distinct political development of Oriental nations and to show how they rise and fall. The synchronistic chart is also valuable. The one I value most was a chart which we made this year showing the rise and fall of the Oriental Empire and the place of the Hebrew and Syrian kingdoms in the development of the Orient.

The diagram plus the word picture often arrests the wandering attention of a class and brings a picture before the mind which sticks. For example, in discussing the Hanging Gardens of Babylon, draw in roughly the terraced platform 100 feet high in which the palace stood, draw in the palace with the roof garden on top and then fill in your terraced platform with trees and shrubs. I asked the question on examination and there was not a one in the class but what could give the details.

Other aids in visualization are the writing of historic letters, the debate, and the pageant. I have used the debate; but find it more effective in American History than elsewhere.

In summary, I believe the framework of history should have mental discipline for its purpose; and that there should be a distinct advance in the mental discipline of history from year to year. The cultural side of history purposes to make the past live and by tracing the progress of society, to unconsciously help progress herself. To do this requires a love for the subject of history by the pupil; and the aids for this development are collateral reading and visualization devices by the teacher, through whom the pulse of class interest and enthusiasm beats. May she be worthy of her high calling.

A general discussion followed emphasizing the fact that certain standards must be set up as a guide to the student in his desire to meet with definite requirements. It was also pointed out that history teachers must inspire their students to like history.

Dr. Tryor of the University of Chicago, School of Education, said that this had been accomplished in the Chicago University High School where in a test of students likes and dislikes in an enrollment of 400, history stood second in popularity though designated as the study making the heaviest requirements of study.

Professor Clarence W. Alvord of the University of Illinois, discussed "The Centennial History of Illinois and the Problem of Local History in the High School." This undertaking is a unique project in that it is to be a comprehensive history of the State written by thoroughly trained historians employed for the purpose by the State itself. An effort is to be made to avoid the old methods of treating state history. Instead of limiting themselves to an analysis of political move-

ments, the Centennial authors mean to present a view of all the forces,—social, economic, religious, intellectual, and political—which have gone into the making of the State.

Emphasis was laid on the fact that considerable material is to be employed which has hitherto been neglected. For instance, a study is to be made for the first time of a number of documents relating to Illinois which are in the French archives in Paris; and a more extensive research than has been before attempted is to be made in newspaper files. Thus it is hoped that the Centennial History will make many distinctly new contributions to the knowledge of the commonwealth.

Illinois has accomplished more than most states in the way of collecting the material for her history, but much of it is still so scattered that it is extremely difficult to use. Many documents from which a trained historian could draw illuminating evidence are being preserved in places where their existence is practically unknown. This difficulty affords a splendid opportunity for the people of the state to co-operate with the writers of the history by making these hidden sources accessible. Thus there is a real opportunity for the teachers of history in the high schools to contribute materials from their various localities and to arouse in their students an interest in things historical. Because of the neglect of this source material there are few local histories existing that are really worth while. The population elements connected with settlement, the relative influence of these various elements, the history of education, of industrial development, and so forth have never been adequately studied. This is necessary to an understanding of Illinois history in its larger meaning.

Professor Simeon E. Thomas, of Charleston Normal, in leading the discussion on this topic gave some suggestions as to practical methods which could be employed by teachers to awaken "historical-mindedness" in their students. The direct teaching of Illinois history is prevented by an already overcrowded curriculum. Research work in local history could, however, be made a part of history work outside the text book. By actually experiencing the difficulty of obtaining full and accurate information on any particular event in the past, the students will better realize the nature and significance of the scientific study of history. This would be through the use of local history for illustrative material. It is not necessary to attempt very big or very general topics; the students may learn to work up well organized, accurate, and carefully documented theses from research on very simple

subjects. Investigation might be made, for instance, of the history of the map of the town; of various public buildings; of a particular church corporation; of an important administration; of the public utilities,—whether owned by the municipality or conducted under franchises; of local newspapers and manufactures; and of biographies of celebrated citizens. Such studies would develop in the students a healthy civic pride, as well as a new conception of history; by preserving the written results, a high school could gradually collect an interesting library on local history, much of which would otherwise be lost.

C. W. Alvord suggested that a committee be appointed to consider the possibility of the selection and publication of certain illustrative material for Illinois history such as had been done in Indiana, this committee to report at a later meeting. A motion was made to that effect; seconded, and carried.

The afternoon session was called to order by P. V. B. Jones in the Physics Lecture Room. Mr. U. S. Parker, of Quincy, read a paper on "Current Textbooks in Civics." Following is an abbreviated copy of Mr. Parker's paper:

In order to determine whether a text book is good or poor we must know what it is intended to accomplish. A text book in civics should aim above everything else to produce good citizens. Without intelligent, wide-awake, public spirited citizens, our republican government is doomed to failure. A text book in civics is a good text if it tends to make good citizens and poor if it does not produce that result.

What are the marks of good citizenship? A good citizen is a person who is sufficiently interested in all public questions to give time and thought to their study. In the second place, a good citizen must understand the structure and working of our governments, national, state and local. The intelligent citizen must also understand the part the people must play in running their government if they would keep it out of the "hands of the boss." Our good citizen must also know what the government is doing for the people, in order to decide whether or not the sphere of public activity should be widened. Finally, he must understand the problems of government that confront him, since every voter, either directly or indirectly, must help solve these problems. In the third place, the good citizen is one who realizes the importance of good government, who knows that good governments are a positive help to all the people in many ways; and the ills of bad government must be clearly understood. This realization is necessary in order to hold men firmly to this civic duty. No mere sentiment will do it. There must be a more powerful incentive. Such a force is found in the realization of the fact that modern governments, with their manifold relations to our business interests, and our intellectual, moral and social welfare, are powerful instruments for good or ill.

Out of all this knowledge must come the fourth characteristic of good citizenship, the *feeling* of personal responsibility in helping secure good government. One of the weaknesses of mankind is that they know better than they do. Nothing but this feeling of personal responsibility will translate knowledge into action.

A good text-book in civics, to state the case briefly, should be clear and interesting in style, so organized as to reveal clearly the big things and their relationships, should emphasize the underlying principles of structure, workings and functions, what governments do for the people, the effects of good and bad government, and the live problems of the day.

A few of the most recent text-books, especially those for the eighth grade and some for the ninth grade or the first year of high school are headed in the right direction. They are interesting in style, and emphasize the really vital things that pupils of that age can understand. But the majority of high school texts fall far short of the test that we have suggested. Even in the elementary principal of clearness they are faulty. An examination of seven high school texts, all of recent date, published by the leading book companies in the country, and widely used, shows them to be very defective in some or all of the essentials of a good text, for they are often lacking in clearness, not organized so as to make the author's thought stand out in bold relief, nor are their contents what they should be.

Take for an example of the lack of clearness the discussion of the subject, *gerrymandering*. Only two of the seven texts adequately explain what it is or how it is done. One attempts to do so, but the explanation is not accurate. The other four texts merely state that gerrymandering is dividing the state in such a way as to give the party doing it an unfair advantage. None of the seven texts give any explanation of the evils of gerrymandering beyond the statement that it is unfair to the minority party. That the party in control of the legislature may become the party of the minority and still hold their power against the will of the majority by this political trick is not even hinted at. Thus these texts not only lack clearness, that is all but two of them, but all of them fail to show the significance of the thing they discuss.

As to content, all of these texts are woefully deficient. Instead of emphasizing the great principles of government, the meaningless details of the duties of officials occupy the chief place. For example, in discussing county government, these texts devote from two to nine pages to the subject, but not one of them calls attention or even hints at the fact that the ordinary county executive department is "headless, irresponsible, and inefficient," to quote the report of a New York committee of investigation. Failure to recognize and emphasize the same principle in our state executive department is nearly as complete. Three texts do not refer to the fact that the department is decentralized, three very briefly refer to this principle but do not indicate any bad results that might follow. Only one of the seven texts does this, but it does not show whether or not bad results have actually followed. In fact the student who uses any one of these texts would get the impression that all our governmental machinery is working well, except possibly our city governments.

There is, moreover, no adequate discussion as to why our city governments are corrupt and inefficient and there is practically no discussion of the new forms of city government that are growing up in America.

Only two of these texts give any attention, except incidentally, to the work our governments are doing for the welfare of the people, except perhaps raising and spending public money. Not one of them emphasize, directly or indirectly, the fact that bad government hurts all the people and the good government is a powerful agent of human progress and happiness.

But two of these texts even attempt to show what the people must do to secure good government, or that we have in any measure made a failure of self-government. How the nominating machinery is controlled by bosses and rings for the benefit of themselves and the special interests that stand back of them is a thing unknown to the student of most of our text-books. Thus not one of these seven text-books come anywhere near standing the test. Not one of them will properly prepare for citizenship, and the student would remember his civics as a dull, meaningless, catalogue of officers and their duties, all of which had little connection with his individual welfare.

The main question for the teacher is: How can I correct the defects of the text? First of all, the teacher must know the subject. If his knowledge of the subject is confined to what is in the text or even half a dozen texts, he can be of little help to the student beyond giving him a little memory drill in facts of little value. The teacher must know the subject in a larger way and include in his library the great standard works such as Bryce's American Commonwealth, the American State Series, and others. He should also be very familiar with current magazine articles dealing with the numerous problems confronting us.

Many defects of the text may be remedied to a large extent by giving questions and suggestions in assigning the lesson. If a definition is obscure, a question or suggestion may enable the student to understand it. The great principles may to some extent be worked out by the student from the facts given in the text when provided with a series of questions. These questions will draw upon the student's general fund of ideas and he will usually arrive at the proper conclusion. Then in class these questions should be discussed and definite conclusions drawn.

The third thing the teacher can do to remedy the faults of the text and put life into the subject is to have each student give one or more reports on some vital topic of the day, based upon current magazine articles.

Lastly, civics can be vitalized by devoting some time each week to current news, with some good school paper or other magazine in the hands of each student. Thus by utilizing the facts of the text in a proper way, as materials from which general principles may be drawn, by reports or by current news, the subject of civics will no longer be the dry bones of governmental machinery minus general principles, but it will become a real live subject that will interest live boys and girls, that will make them realize that citizenship means responsibility, and the rising generation will be better prepared for their civic duties.

In leading the discussion of this paper Mr. W. C. Baer, of Danville, spoke as follows:

There is a better reason for studying the needs of our civic text-books than any other subject taught in the curriculum of the high school. If the purpose in teaching civics is good citizenship how important is it that we find out some of the best ways and means to attain our end. The best is none too good.

Some of the best excuses for poor teaching in the past have been due to the use of so-called inadequate text-books. Whether just or unjust there is often more truth than fiction in the criticism. We are agreed that it would be impossible to get a text-book in any subject that would please each individual. Our methods of teaching vary greatly.

There are a number of just reasons for criticising the civic texts used in our high schools. The authors of our early texts in civics were men who did not understand the needs of the average high school pupil. They lacked the experience in high school teaching necessary to qualify them to have the proper perspective to write a text-book for high school use. Generally speaking this has been a chief reason why books have been used in the high school which were not adapted to its needs.

Another just criticism is that many of our civics texts are published for general use rather than for the schools of single states. For this reason undue emphasis has been laid upon the federal constitution. The danger of narrowness or provincialism resulting from the use of state editions can be eliminated by an appendix or supplement of at least fifty pages; this should contain an account of the government of the state. Professor James W. Garner has used this plan in his "Government in the United States," which is called the "Illinois Edition."

The conditions under which civics is taught in the high school deserve our consideration. The practice of some of our high schools of correlating the study of American History and Civics in one year's work is to be deplored. This condition is due to either a lack of teachers in the high school or to the failure to realize the absolute impossibility of doing efficient and thorough work in both subjects in so short a time. The other fallacy that is practiced is to treat civics as a sort of a "floater" in the curriculum for some good natured overworked individual to take as his rest period. Moreover, if the purpose of civics in the high school is to make good citizens, it is essential that the teacher have special training in political science, history and civics.

Encouragement should be given to up-to-date texts or editions. A teacher in a high school of over five hundred pupils recently informed me that he has been compelled for three years to use a civics text-book five years out of date. The authors and publishers had upon the market a revised edition of the same text up to date in every respect. The changes in congressional procedure, initiative, referendum, recall, commission form of government were only a few things that were not in the old text and had to be supplied by the teacher. He was discouraged from changing to the newer edition on the ground that

a change of editions was the same as a new adoption, that it was, moreover, customary to make two or three changes a year in the school text-books and for that reason should make the best of conditions.

In the writing of a text-book for civics in the high school the pupil who is preparing to enter college should be kept in mind as well as the pupil who only expects to finish the high school. For the pupil who expects to go to college, and even for the pupil that does not, it seems proper that the text should contain something about the origin of government, briefly outlined, so that the relation of government to history might be understood. There should be also a description of the structure or machinery of government. There is a great demand for applied civics, and accordingly more than one-half of the chapters of the text should be devoted to the work which the government performs.

Professor Garner states that one chapter should be devoted to the increasing duties of citizenship.

James and Sanford believe that topical outlines should be omitted. That it is better to have the pupil make his own outline, thereby encouraging initiative. Good illustrations are a great help to make an appeal through the eye.

To supplement the work in civics a book might be used similar to the one written by Mr. S. O. Rorem of Sioux City, Iowa, entitled "How Sioux City is Governed." This is a condensed explanation of the city, county, state, and federal governments as they work in Sioux City. A book like this would give the pupil a definite knowledge of his own civic environment.

It is evident that not only are our civic text-books defective in many ways for use in the high school but that the conditions under which the subject is taught must be improved, that a proper attitude toward the importance of such a subject must be created and that the teacher have the necessary supplementary equipment to make the study both interesting and helpful.

Mr. Kingsley, of Boston, called attention to the report of the State Inspector of High Schools of Massachusetts; pointed out that the aim of a civics course is to study those ideas of community welfare that have led men to cooperate. When they get to this point then they study the forms of government which secure this. These include such agencies as the Board of Health and perhaps even the Anti-tuberculosis Society. Public transportation, civic beauty, etc., are also discussed. After studying how governmental agencies work, then the matter of how they are financed may be taken up. Little of this ground is covered in the regular textbook.

Miss Morehouse, of Normal, rose to defend the text-book writers. She showed that they do important work in explaining the really important principles of government. Certain standard texts do give the material basis for practical reforms.

Mr. Russell V. Story, of the University of Illinois, stated that the reading of entrance examination papers convinced him that something was wrong. Less than forty per cent were able to pass an examination of easy questions.

Mr. Charles C. Dickman, Peoria, read the following paper on

Elementary Economics as a Part of a Course in Civics

I have endeavored to show that there is a very close relation between certain elementary phases of economics and civics. Generally speaking civics is the study of government. For the sake of analysis I have divided government into three parts and I call these parts first, the machinery of government, second, the products of the machinery of government, and third, the people. The machinery of government consists of such things as constitutions, the three departments of government, legislative, executive, and judicial, political parties, and so forth. These we have studied in schools under the title of civics and their place in text-books of civics, of course, is undisputed. The products are the institutions created and maintained by the machinery. These institutions though vital to society in the past when society was less complicated are ever becoming more and more the determining factors of what the character of the society shall be.

Some of these institutions are the Sherman Anti-Trust Act, the Inter-State Commerce Commission, the Federal Reserve Banking Act, the Income Tax Law, regulations of working conditions and the length of the working day, Boards of Health, and Fish and Game Commission, Employers Liability Acts, Compulsory Insurance Acts created by state governments. Things of distinctly local interest of an economic nature may be added to the list. These are the economic subjects which are trying to get into our courses in civics.

Social and industrial problems have ever been closest to the hearts and minds of mankind. Life represents one endless struggle for existence to gain its maintenance. Human energies and efforts are constantly being bent upon the production, the attainment, and the accumulation of utilities. With this in mind men ride over the rights of others crushing whatever opposition they meet. They have combined themselves in their colossal effort to gain absolute control of whatever humanity demands.

The machinery of government has been made to grind in their favor. Governments have legislated again and again in the interest of special privileges and predatory interests. Vast territories as large as some European countries have been given to small groups of men in the interests of their industrial aspirations. Franchises worth millions have been doled out. The nation has been taxed under tariff laws in order that individuals or groups of individuals might profit thereby.

The result has been that these same individuals have gained so much power as to be able to defy the very government itself. More than that, if the accusations and representations now current are true, a single group of men

not only defy the government, but actually own and control it in one of our sovereign states. Just about the time when it seemed to many that it was too late our government has made frantic and heroic efforts to destroy these great powers. Legislation is trying to balance conditions, is now making attempts to control in the interest of the whole society.

The tendencies of the times is toward the creation of monster institutions. The very situation that the disorganization of the trusts tended to create; namely, competition, is forcing capital to organize into larger institutions in order that the economic struggle for existence may be survived. The almost universal utilization of wastes into by-products made possible only under large production schemes has so intensified competition that the smaller industrial units have not been able to survive. Popular opinion too is undergoing a revolution and big business now has the sanction of the age. But our inexperienced minds must still view such concentration as a menace to our civil liberties. Past experiences with monopolies have left such bad tastes that we will bend our best efforts that they may not be repeated. One solution is government control, and the leading governments of the world are making attempts to control with more or less success.

To this end the Sherman Anti-Trust law hopes to prevent the creation of monopolies. The Federal Income Tax law gives the government the power to limit the profits of business. The Federal Reserve Banking Act hopes to provide an elastic currency and to make the establishment of a money trust impossible. The Inter-State Commerce Commission has been created with legislative, executive, and judicial powers to put its fingers at the throat of the greatest industrial institutions in the world. Wise men, public spirited men are talking about government ownership of railroads, telephone and telegraph systems, and mines.

These things to my mind are assuming vastly greater importance for society just now than the things I have called the machinery of government. The interpretations of the constitution, the duties, and the powers of the different branches of government are well settled and reduced to tradition. The American citizen has the franchise. He reads of these things in the daily papers; he discusses them with his fellowlaborers. The issues at elections are often one or more of them and he is called upon to decide them with his ballot. His intelligence and knowledge of them will determine their fate. Then too are not these economic subjects so closely connected with the machinery of government that the natural and logical place to study them is in the civic courses?

Have we room in an ordinary course of civics to teach these economic subjects? Are these subjects of sufficient importance that we are justified in omitting some of the subjects in civics which we have always included if there is not room for all? My conclusion is that they are of sufficient importance and that we are justified in shortening our regular civics courses, if necessary, in order that we may find time to study these economic subjects. Their close connection with government makes the civics text-book the logical book in which to present them.

In the general discussion that followed, it was agreed that economic factors were important inasmuch as economic problems are really at the bottom of our reasons for government. Such questions should therefore receive consideration in our civics courses.

A business session followed. The chairman of the section committee announced that the term of Mr. U. S. Parker expired with this meeting; Professor Larson also found it necessary to be relieved of his committee duties.

Mr. Parker was immediately re-elected to his former position on the committee.

Dr. A. C. Cole of the University of Illinois was then elected as a member of the committee to serve as secretary for the social science section and editor of the proceedings of this section.

The meeting then adjourned.

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